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**Final Technical Report**

**Date: December 31, 1997**

**Install Modular Manufacturing Work Teams at a DAM, Phase I**

**Sponsor: Defense Logistics Agency  
PPFG T1-P1, Phase I**

**Principal Investigator: Bob Lowder**

**Charles Gilbert Associates, Inc.**

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## **EXECUTIVE SUMMARY**

The PPFG T1-P1, Phase I, Short Term Project conducted by Charles Gilbert Associates, Inc. at the New Maryland Clothing Company implemented the first four of ten Modular Manufacturing Work Teams to manufacture Army Dress Uniform Coats. The project is viewed by the Principal Investigator as a success beyond expectation, but at considerable cost.

CGA personnel trained the management, supervision, and employees of Maryland Clothing in Modular principles, created a plan to convert the entire plant, and implemented the first four teams. These teams are functioning with some problems, but are delivering better than expected results.

The metrics used to show the differences before and after implementation are all positive. Some, such as Actual Man-Hours Per Coat, Throughput time, and Morale are far better than anticipated. All other metrics are in a good range. No metric is in negative state.

The overall evaluation of the project is good. It is above the minimum level needed to keep things at the present level. If any thing could be better, it would be the management of Maryland Clothing assuming more of a leadership role, so that CGA could move more quickly on other modules.

Phase II, which is underway, will benefit from the experiences in Phase I. The attempt to get Maryland Clothing management to accept more of a role in leadership is key to its success.

# **INSTALL MODULAR MANUFACTURING WORK TEAMS AT A DAM, PHASE I**

## **1.0 INTRODUCTION**

### **1.1 Purpose, Scope, and Objectives**

The PPFG T1-P1, Phase I, short term project conducted by Charles Gilbert Associates, Inc. at The New Maryland Clothing Company began the process of changing the manufacture of Army Dress Uniform Coats from conventional line concepts to Modular Manufacturing Work Teams. Phase I of the project installed teams at the end of the manufacturing process, basically from Baste Undercollar to Final Inspection. Four of ten teams are covered in Phase I. The primary objectives of the project is to show that Modular Team concepts can be successfully implemented in tailored clothing manufacturing, that the time to make a tailored garment can be greatly reduced, and that the monetary benefits outweigh the costs.

### **1.2 Source and Method of Evaluation**

In order to test the progress of the project, certain metrics were identified and tracked during the project. The metrics came from payroll, personnel, and shipping documents prepared by Maryland Clothing during the normal course of their business. Comparison of the data before the implementation of the project to the data at the end of the project form the evaluation of success.

### **1.3 Report Organization**

This report reviews the basic concepts of Modular Manufacturing and the adaptation of those concepts to the Army Dress Uniform Coat. The implementation process is described through by basic steps with references to timeline. The results section notes actual accomplishment measured against the Maryland Clothing metrics. Since the first phase of the project exceeded the initial time required, as well as cost, a section is devoted to explaining these deviations. An evaluation of this project compared to other projects is presented to help in grading the project.

## **2.0 DESCRIPTION OF MODULAR MANUFACTURING WORK TEAMS**

### **2.1 Definition of Modular Manufacturing Work Teams, "Modules"**

Modular Manufacturing Work Teams are defined by the American Apparel Manufacturers Association as a group of 5 to 17 people working together to accomplish an assigned assembly process. The team is assigned machinery, other assets sufficient to complete the process, and authority to make certain decisions. Members are cross-trained to the extent practical to keep product flowing smoothly. Payment to the team is based upon completion of first quality units.

Modules work best when an entire assembly process can be assigned to the team, but modules can be linked in various ways. One method of linking is end to end, where one module feeds another, etc. A second method allows a single module to feed certain components to multiple modules doing subsequent

process steps. While a single module allows for the fastest throughput time, many products are so complex that a single module might need to be too large to retain the "closeness" of a good team or may require members to learn more operations than is practical. Typically, the more complex the product, the more likely modules are to be split or linked.

## **2.2 The Basic Types of Modules**

There are two basic types of Modules popular in apparel manufacturing... Batch and Single Piece Processing. Both are used successfully, although, Batch modules are more numerous than Single Piece.

*Single Piece Processing* means that a single garment is passed from operation to operation individually. This type of processing was popularized by Toyota Sewing Systems during the mid 80's. It is characterized by team members who stand, many more machines than employees, and constant movement of members between operations. Each team member has only one piece of work in hand. As a unit is completed, the member moves to the next member and relieves him of his unit. This member moves back down and relieves the next, etc. This process is sometimes referred to as "Bump-back" or "Bumping". The time to process one unit is very short. It normally exceeds standard time by only a small amount, so the throughput time for a single unit is typically minutes as opposed to weeks on conventional methods. The cost to process a single unit may be less than that of a conventional system, but not by much. Since the system forces members to move, there is less problem in getting people to move, and thus there is less need for formal training in how to work in this type module. There is, however, a significant offset to the reduced classroom training. Members typically must learn far more operation steps than in conventional or batch processing. This being the case, performance may actually suffer

compared to conventional means. Machinery is normally arrayed side-by-side in a horseshoe approach. The amount of space required per employee is normally greater than conventional systems. Machine-to-member ratios rarely are less than 2:1 and are as high as 4:1. This ratio coupled with the need to convert machinery to standing make the initial investment much higher than conventional methods.

The *Batch System* of processing allows for a small supply of work between operations. Normally, the amount of work between operations is much less than in conventional systems. This small amount of work in process means that members need to move less frequently than with Single Piece systems. While a conventional system may have a goal of 2-3 hours process between operations, a batch module might have 10-30 minutes at most. Most batch systems allow for members to sit and perform operations in similar fashion to conventional systems. Layouts of machinery can be in horseshoe, side-by-side, front to back, "Y" shaped, or even circular. The layout fits the product, flow of work, and components added. There is usually less square footage per machine. Since training and switching are minimized with the Batch approach, performance is generally better. Machine-to-member ratios are approximately 1.25:1, and rarely go beyond 1.5:1. This means that the batch systems require less machine investment than single piece modules.

### **2.3 Batch System of Module Selected for Maryland Clothing**

The *Batch System* of work was selected for use at Maryland Clothing for several reasons. There was little need to reduce throughput down to minutes or even hours, since shipments are normally made on a weekly basis. The extreme

difficulty of the product and the high degree of skill needed on many operations made the need to limit cross-training desirable. The lack of space played a part in the decision. The need to work within the confines of large pieces of pressing equipment made the flexibility of layout with the batch system more attractive.

It was decided to link the teams end-to-end rather than have any two or more teams do the same tasks in parallel. Initially, 10 teams were selected. This would mean the teams would average about 10 members and about 12 to 18 operations in the teams.

### **3.0 IMPLEMENTATION OF THE PROJECT**

#### **3.1 Planning the Project**

As with all Modular Manufacturing Projects, initial planning is needed. The planning for this project entailed learning all the operations, learning about the payroll policies, learning the cost structure, learning some of the key quality points, learning how work was presented to sewing by cutting, learning the background and experience of all the key personnel at Maryland Clothing. Once all this was done, the management, supervision, and selected direct employees were brought into the planning process.

##### **3.1.1 The Steering Committee**

The steering committee was formed from personnel at Maryland Clothing that included the manager, supervision, and certain sewing employees. This group was given indoctrination about different ways to implement modules. Once the indoctrination was completed, this group spent time answering questions about how they felt modules would best work at Maryland Clothing.



### **3.1.2 The Questions That Formed the Module Outline**

There were many questions that CGA has developed over its years of experience that when answered form the outline of how a company would like to see modules work. CGA played a key role in making sure that the answers to the questions would be compatible with Modular concepts. Among this list of questions are:

- Should the teams sit or stand?
- Should the teams be paid upon completion of all work, or for first quality only?
- Should team members earn the same pay?
- What goals do you want to accomplish with the implementation?
- How much work should be between operations?
- The steering committee answered all the questions. Their answers were then presented to the owner of Maryland Clothing. The final decision about how things would be done was made by the owner of Maryland Clothing with the advice of CGA. Once the outline of how modules should work was decided, CGA moved on to training and dividing the floor into modules.

### **3.1.3 Dividing the Sewing Floor into Modules**

The Army Dress Coat presented many more challenges to CGA in dividing the floor into teams. Firstly, the sheer number of operations (123) was enormous. The number of people performing the operations was 111. CGA personnel spent more time than normal to look at each operation that had to be performed on the coat. CGA did a cycle study on each operation, drew a basic footprint of each operation, talked to each employee about their operation and skills, and analyzed the payroll results against the cycle and the standard. This knowledge

made it possible to divide the process into logical parts that could be put together to form modules.

Included with this report are several exhibits that will further explain the process of developing modules for Maryland Clothing. To show how the floor was divided into modules, Exhibit I, MODSPLITS, is presented. This shows the expected efficiency of each team member and their primary assignments based upon the operation(s) the team member most often performs. This Bid Worksheet provides a good starting point to judge whether or not a team will have enough potential to earn their previous level of earnings or if additional help will be needed in order to complete the number of pieces targeted.

During the first phase of the project, CGA deemed it prudent to go through the entire plant to make an initial split of all teams. In doing this, several mistakes were avoided. First, this work led CGA to put parts assembly with the module that added the small part to the main or trunk assembly. Second, a spec change occurred, eliminating the cuff finish. This change affected modules in Phases I and II. Since there was good knowledge of all operations, the change was incorporated with little loss to initial planning time. Third, an initial plant layout was done that proved space was sufficient to complete the project.

### **3.2 Team Training**

#### **3.2.1 Team Classroom Training**

Once the Module outline or plan was completed, CGA began the process of training individual team members in a classroom setting. The training sessions were conducted on an overtime schedule, because Maryland Clothing could not afford to lose any production. In many cases, other employees also worked overtime in order to make up for losses from the group being trained.

Exhibit II, Team Member Training Outline, shows the general breakdown of training topics in CGA's team-member classroom training program. While not every topic is taught to every group, the basics are taught to every group. Roman numerals V and XIII were not taught to every team. The others were taught each of the topics.

### **3.2.2 Lost Labor**

It became obvious during the initial training sessions that Maryland Clothing was not going to be able to afford the training of their employees. The project was in jeopardy of being canceled by Maryland Clothing. A modification of contract was secured to reimburse Maryland Clothing for the overtime premium and variable fringe benefit costs of the training required to insure success of the project. Exhibit III, Analysis of Potential Lost Labor, documents the method of calculation and the total anticipated. In fact, training time exceeded that which was sought in the modification.

The lost labor cost for Maryland Clothing was budgeted to be \$35,263. This was actually spent and more. Though no formal records were kept, it is estimated that an additional \$15,000 of expense was incurred by Maryland Clothing. For all practical purposes, this served as a cost match on their part. This makes the actual lost labor cost of training over \$50,000 for the first four teams.

### **3.2.3 On-floor Training, Drills**

Once a team has established its member's primary assignments, it is necessary to test the team and see where help is needed. This is done through drills conducted by CGA. The drill seeks to put the team in a module-like environment. Excess work in process is removed, and the team is asked to operate as a module for a period of time, initially at 2 hours. The time for the drill grows as the Team can grow its ability to keep the work moving.

During the drill CGA notes how much work is done on each operation by each employee. If one operation runs out of work, the employee is asked to move to another operation that needs help and which they know. If an operation is overproducing, the employees are asked to move to a job that needs help.

Cycle times are made on each employee on all the operations they perform during the drill. The cycle times are used to reinforce each team member's potential on each operation as well as provide a base line for future improvement after cross-training.

#### **3.2.4 Classroom Training, Bidding**

After enough drills have been performed to show the team members where their strengths and weaknesses are, CGA puts the team through a second bidding session. This is done in the context of what would have made results better in drills. Team members can see the operations that are in need of help, the team members who have time available (normally from stronger operations), and can see what training will be needed.

#### **3.2.5 On-floor Training, Cross-training**

The thing that makes modules work is team member's abilities to learn additional operations and perform them as the team needs. The success of a module can be directly traced to how well team members learn the skills on operations upon which they are weak, and how well they move or shift responsibilities to keep the work moving at its most optimum level.

Normally, teams can learn all the operations requiring help. That has not been the case at Maryland Clothing. There are some operations that are extremely difficult. These operations require extreme amounts of particular skills for which machinery or attachments do not exist to aid the training process. The training

curves are quite long, up to six months, and there is a high incidence of failure to learn these skills. At Maryland Clothing, these operations have been found around the armhole area. Teams 7 and 8 have the majority of them. No matter how much training has been done, the team members still need help on these operations when one of their number is absent. When this occurs, Maryland Clothing uses Utility Employees to take up as much of the lost capacity as is possible.

### **3.3 Use of Utility Employees**

Utility employees are employees with skills on a large number of operations. Maryland Clothing employs three people in this capacity. These people sometimes do several operations in a single day. Their skills generally are sufficient to do a good quality job, but may not be good enough to earn a sufficient wage for the utility employee. In order to keep these people, Maryland Clothing has guaranteed them an hourly wage.

When Utility employees are used to replace missing team members, the team must give up the value of the work the Utility employee does for them. This is their contribution to the Utility's pay. Maryland Clothing makes up the difference between the piece rate money earned by the Utility and the hourly guarantee of the Utility.

Since the modules are now on a group incentive, the demands upon the Utility employees are growing. This growth in demand is group pressure being brought to bear upon the Utility to produce more. Since the Utility is hourly paid, this is

obviously a potential conflict. In order to alleviate this situation, CGA has proposed a split incentive system for Utility employees that will allow them to earn more, if they perform better. This is in keeping with the belief that some Utility employees know more, do more, and, therefore, are entitled to more money than they are currently paid.

Exhibit IV, Proposed Split Incentive, Utility Employees, shows the three methods proposed to the management of Maryland Clothing. The method that will be used is still in being considered by Maryland Clothing.

### **3.4 Payroll Procedures**

*NOTE: In order to preserve Maryland Clothing's sensitive pay rates, piece rates, etc. the following is based upon the exact process of conversion, but uses amounts that are not necessarily the same as now being paid by Maryland Clothing.*

The task of converting Maryland Clothing from a true piece rate shop to a group based incentive program has not been simple. Payroll procedures at Maryland Clothing have been built around a computer program that is limited and with the ability to use different conversion factors for different employees.

CGA operated on the basic principle that as long as group output in SAH or SAM was the same as the cumulative amounts previously contributed individually, then no one in the team would lose money. If the group did more, they would all earn more. If the group did less, they would all earn less. In order to make this a reality, CGA did the following things.

### **3.4.1 Establishing Old Earnings Levels**

The average used for the first groups was the average used to pay benefits such as vacation and holidays. This immediately revealed some problems. Certain employees were now doing considerably more than they had previously done. This was due in part to increased skill and effort and sometimes to the presence of more work. The answer to this problem was to basically negotiate an appropriate average for each employee. This allowed the management of Maryland Clothing to set performance levels that were more indicative of how the individuals were actually performing immediately before being put into teams.

### **3.4.2 Converting Old Earnings to Performance**

*In order to work through this process using an example, the following metrics are now introduced for this example:*

*Old Earnings Level: \$ 10.00*

*Conversion Rate: \$6.00*

*Old Hourly Bonus: \$ 1.00*

Once average was obtained, CGA then converted each average to the percentage of standard performance for each individual. This conversion had several steps because, at Maryland Clothing, each employee had a "conversion rate". This was used to change minute values at standard to a piece rate for the employee. As an example, if an employee had a conversion rate of \$6.00 per hour, it meant that one minute of her time was worth \$0.10. If an operation had a standard allowed minute value of 3.000 per unit, the employee would be paid \$0.30 per piece for each piece completed.

In addition to an individual conversion rate, the employee also might have had an hourly bonus amount they were paid in addition to piece rate. These amounts ranged from nothing to over \$1.00 per hour for employees who were long

serving and highly skilled. The second step was to take the previous paid average earnings and subtract from it the bonus amount. From our example above, \$10.00 minus \$1.00 bonus means that the employee earned \$9.00 per hour in piece rate money.

The final step in converting pay to performance was to divide the hourly piece rate money earned by the conversion amount. From our example, \$9.00 earned per hour divided by \$6.00 conversion rate, means this employee performed at 150% of standard.

Each individual's contribution to the team was determined using the same three steps. Once everyone in the team had been determined, the entire group's performance levels were averaged. This was the level of performance the group would need to average in order to earn the same as their previous earnings. This was in keeping with the basic premise of dealing with individuals fairly.

### **3.4.3 Developing a Group Conversion Rate**

In order to develop a group conversion rate, CGA had to make several things fit together. Firstly, the desired average earnings of the factory was kept in mind. For our example, the assumption is made that Maryland Clothing needs to pay \$8.00 per hour to the average employee in order to keep the caliber of employee needed to make its type of apparel. Secondly, the average bonus paid per hour is now \$0.50 per hour. This means that Maryland's employees earned \$7.50 per hour in piece rate earnings. Thirdly, the actual piece rate performance of the plant was needed. Let's suppose that the average conversion factor at Maryland Clothing was \$6.77. This means the average real performance at Maryland Clothing is about 111% efficiency.



It was decided to use a conversion rate of \$6.50 per hour. This was to keep as many people as possible from having to have a negative adjustment to pay ( this is explained later in the report ), The alternatives ranged from \$6.25 to \$7.00 per hour.

#### **3.4.4 Converting Old Piece Rate Values to Group Piece Rate Values.**

The creation of piece rates on a group basis required analysis of the old piece rates and the addition or deletion of certain elements of work that were added or deleted. The process required that each operation be compared before and after team implementation. Any changes in the work elements brought about by the team process would then be adjusted into the standard time for each operation.

The biggest single source of change in time values was due to the elimination of some of the bundle handling time. This was mainly due to not retying the bundles and not clipping individual pay coupons. Other differences were due to changes in the operations themselves. There was a net decrease in SAMS per piece.

Once the SAM values were adjusted, they were then extended by the new group conversion rate of \$6.50. This resulted in the total pay for each coat produced by the team. This is also known as the group piece rate. By manipulating the piece rates, SAM values, old performance efficiency, and old earnings levels it is possible to predict how many pieces will be produced by the team, and how much it will pay them in piece rate earnings. It remains to bridge the gap between actual group earnings that only are piece rate money and old averages.

### **3.4.5 Incumbent Adjustments, Need, Calculation and Negative Amounts**

With a single conversion rate of \$6.50, which is less than the previous amount, and a wide variation in previous earnings, it was expected that actual piece rate earnings on new piece rates would be less than the amounts previously earned by team members individually. This meant that a method had to be developed to bridge the difference for those already on the payroll.

The method chosen is to subtract the expected hourly piece rate earnings of the group from the previous average earnings of each team member. The difference is called an incumbent adjustment or incumbent allowance. Each team member has their own incumbent adjustment, because no two team members previously earned the same amount. This incumbent adjustment would be paid to each team member for every hour they worked. By adding this amount to the hourly amount earned from piece rates, the total pay per hour for each individual can be obtained.

Because some employees had previously low earnings, their incumbent amounts are negative. This is done to insure that they do not get a pay increase just by going into a team. Any pay increase will come to them just like every other team member, by completing more pieces and earning more piece rate money.

The door is left open for those who now have negative incumbent allowances to perform better and have that amount changed upward to zero. In the case of The Best of Ten, two of their team members have had their amounts adjusted. This is detailed in a later section of the report.

### **3.4.6 Spreadsheet to Make Payroll Computations**

No payroll policy or procedure is good unless it can be executed consistently and presented in a way that is understood. The payroll program used by Maryland Clothing, while excellent when used as it was designed, is not capable of making the necessary group calculations in order to pay the team members as needed. The system is capable of taking gross pay information and converting it to net pay, etc.

In order to present to the payroll system those items needed to pay the team members CGA built a series of spreadsheets using Microsoft Excel. These spreadsheets are combined into workbook format so that an entire week's activity for a module is resident on one file. Exhibit V, Untitled, is a simulation of the actual payroll for one of the teams for the week ending May 10, 1997.

Exhibit V, page 1, is the weekly summary sheet for the team. There are several main parts to the sheet. The top 1/3 of the sheet is devoted to how the pay is divided among the individual team members. The figures presented are in dollars and are cumulative for the week. The upper center section of the sheet shows the previous hourly average, the weekly average hourly average, and the hourly difference for each individual.

The interesting thing about this sheet is that every team member lost \$0.11 per hour for the week except for two employees. Catherine Owens and Pui Law show gains of \$0.74 and \$0.23, respectively. These are two employees who originally had negative incumbent adjustments. These team members were so improved in performance that their negative amount was reduced to zero to improve their earnings relative to other members of the group.

The center part of the sheet is used to summarize the essential performance data of the team. This includes Units Produced (2,232), Hours on Standard (396.75), Units per Hour (5.63), Team Performance (105.6%), the Actual Cost per Unit (\$1.515), and the Historic Cost per Unit or cost before teams were instituted (\$1.55).

The lower 1/3 of the sheet is devoted to adding on different amounts for each team member. These include any make-up, overtime premium, or other adjustments.

Exhibit V, pages 2-7, are the daily sheets. These present the team's performance and pay data for a single day. The payroll split data is located on the left hand side of the sheets. The right hand side is devoted to collecting and comparing actual output data and metrics with key historic indicators. This data is intended for management use.

Exhibit V, page 3, 5-5-97, shows that the team completed 420 pieces that day. The extension of this by the piece rate (\$1.220) means the team earned \$512.40 in-group piece rate. The far right-hand side of the sheet shows the management metrics. The lower ½ of the sheet shows how the money for that day was split among the team members.

Exhibit V, page 8 shows the essential information about this team's conversion from individual piece rate and individual bonus to group piece rate and individual incumbent adjustments. The process is easily followed. The key to conversion is to multiply the old efficiency level of the team (106.69%) by the new base rate (\$6.50). This means the team will split \$6.93 per hour if they are as productive as before. The net affect of all the additions or subtractions is to get each individual back to their original average by using an incumbent allowance. On

page 3 the incumbent adjustment is equal to the premium rate plus any Hold-up Adjustment. The reason two team-members show an increase in pay over previous average is now discernible on this sheet. Their old averages were so low that any performance above 101% would be paying them both extra money. The management of Maryland Clothing recognized their increased contribution and by adding the hold up adjustments, was able to compensate them for their increased performance.

#### **4.0 RESULTS OF PHASE I**

##### **4.1 METRICS USED TO DISCUSS RESULTS**

Exhibit VI, Phase I, Key Performance Benchmarks, is a graphical capsule presentation of the metrics. The original proposal for the project set forth several benefits of going to Modular Manufacturing work teams. The metrics explained in later sections are presented to support the benefits of quicker order turn time, lower costs, reduction of inventory due to faster turn, and better employee morale.

##### **4.2 Days in Plant**

The first metric detailed is the number of working days a bundle of garments takes to get through the plant. The total days includes Cutting, all Sewing, Pressing, and Finishing. The results reported are plant wide, even though only a small part of the plant was covered by Phase I.

In September of 1996, before any work was begun on the project, Maryland Clothing was taking an average of 18.5 days to cut, sew, press, and finish a bundle of work. In June of 1997, the end of Phase I, the time for this was down to 13.8 days. This is a reduction of 4.7 days or 25.4% of the original time.

In September of 1996 it was taking 12.7 days to process work through sewing. By June 1997 the time to sew a bundle had been reduced to an average of 8.1 days. This is a 4.6 day reduction or 36.2% of the original time. Virtually all the reduction in throughput time has come from the area affected by Phase I.

#### **4.3 Pieces Produced Per Week**

The pieces produced per week is an attempt to convert average daily performance to that of a full week. The actual number represents the average daily pieces finished multiplied by five. The result is a full week's production.

During the period around September of 1996 the plant produced an average of 1,985 pieces per week. During June of 1997 the plant produced an average of 2,387 pieces per week. This is an increase of 402 pieces per week or 20.2% of the original metric. The other areas of the plant not covered by Phase I obviously have improved their output, but not without quite a bit more difficulty. The biggest increase in output in these areas is due to the reduction of lay off time.

#### **4.4 Work in Process**

The Work in Process, WIP, is defined as the number of pieces cut, but not finished. The total is for the entire plant. During September of 1996 there were 8,116 pieces cut but not finished. In June of 1997 the number of pieces in process had fallen to 6,602. This is a reduction of 1,514 pieces or 18.7% less than the original amount.

#### **4.5 Actual Hours Per Coat**

The truest test of cost reduction is the actual hours worked per coat. The figures are based upon the actual hours per coat produced by the modules. The overall hours per coat are down significantly. The hours prior to beginning the modules was .3441 per coat. In June the actual hours per coat produced were .3101. This is a reduction of .030 per coat or a 9.9% reduction. This is a true productivity increase.

#### **4.6 Throughput, Actual Hours**

The time to process a bundle through all the operations without rushing the bundle ahead is called Throughput Time. It is obtained by totaling all bundles in and ahead of the modules. This total is divided by the average hourly output of the teams. The result is the number of hours it would take a new bundle, just beginning the process, to be completed.

The metric is stated before, after, and at goal for both teams in Phase I and non-teams as well. Before modules were begun, the throughput for non-team areas was 43.2 hours. The goal for CGA will be 24.0 hours for this group, which will be completed in Phase II of the project. The actual time during June was 54.0 hours. This is an actual increase in time to complete the bundles. This is also seen as a key indicator that this part of the operation was having a difficult time keeping up. The activity level was up significantly, but the actual results were not as good as the module area.

The area covered by Phase I had an actual throughput time of 28.8 days. The goal for this area is 16.0 hours. The actual throughput time in June was 10.8 hours. This is a 166% improvement in actual results and is fully 48.1% better than the original goal set by CGA.

#### **4.7 Morale Increase Indications...Turnover and Absence**

Two metrics that are typically used to measure job satisfaction and morale are the plant's turnover of employees and the amount of time missed or absent. Maryland Clothing is extremely good at both absence and turnover due to a very aggressive policy for attendance.

Turnover in the plant during 1996 was 35.1% of the workforce. Annualized turnover through the first six months of the year is 48.9% for the non-team area. Incredibly, no one in the area affected by the teams was lost during the first six months of the year. This would be a turnover percentage of 0% for this area.

Absence is measured as the difference between hours available ( plant schedule multiplied by people on roll and actual hours worked ) and actual hours worked, divided by hours available. This is the accumulation of all lost time.

Before modules began, the percent of absence was 3.53%. During the period of the first phase, absence for this group was 1.22%. This is a very good sign. 3.53% lost time for all reasons is considered to be excellent. 1.22% is incredible. It will be difficult for the entire project to match the result of this first group.

#### **4.8 Scope of Phase I**

Phase I of the project covers four modules in ten expected to be implemented. These 4 modules took the garment from Basting the Undercollar to Completely Finishing the Coat. Exhibit VII, Summary of Phase I Module Scope and Phase II Plan, shows the metrics of each of the four modules. There are a total of 41 people covered in Phase I. There are a total of 34 operations. Of these only 2 operations have a population that exceeds 2 people. Sleeve Set requires over 3 team members and Pull Basting requires over 4 people.



## **INSTALL MODULAR MANUFACTURING WORK TEAMS AT A DAM, PHASE I**

Normally, modules would have something like 1.5 people per operation. In the case of Maryland Clothing, Phase I, the ratio is 1.2 people per operation. This is a very big difference than normal.

Clearly the benefits of the project have already spilled beyond the original scope. There is already an increased activity level in the other parts of the plant. This should make going into Phase II a better process, but the improvements in the group may not be as good as Phase I, because they are already performing at a better level in some cases.

### **5.0 EVALUATION OF PHASE I EFFORTS**

#### **5.1 Method of Evaluation**

Charles Gilbert Associates has implemented Modular Manufacturing Work Teams in many different companies. There are certain things that can be judged from implementation to implementation. Each area of work at Maryland Clothing is compared to the best known implementation done by CGA and the minimum level needed for the best result. Explanations are given for each of the areas. Exhibit VIII is a graphic representation of each area of evaluation.

<b>MAJOR PROCESS STEP OR TASK</b>	<b>BEST KNOWN PRACTICE</b>	<b>MD. CLOTHING ACTUAL PRACTICE</b>
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#### **5.2 TEAM SELECTION      SELF-SELECTION      WORK RELATED**

Because of the nature of the product and the state of training, true self-selection was not a viable option at Maryland Clothing. With over 150 process steps and around 100 people, there were few options. The entire plant was put into modules, so it was best to let trained skills dictate who was on a team.

MAJOR PROCESS STEP OR TASK	BEST KNOWN PRACTICE	MD. CLOTHING ACTUAL PRACTICE
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**5.3 CLASSROOM,  
TRAINING**

*REGULARLY  
SCHEDULED*

*AD-HOC, OVERTIME  
SCHEDULE*

Because of the single population on many operations, when team training took place, it virtually assured that the next operations would run out of work that overtime would result. The classroom training had to be abbreviated and done on an opportunistic basis. This meant that some teams received training out of rotation, because of the need to maintain workflow. The great variety of cultures in the plant has meant that understanding basic principles is a challenge. For the most part, this has been taken care of through the use of translators and in practical experience.

**5.4 ON-FLOOR  
FOLLOW-UP**

*SET PERIOD,  
FULL ATTENTION*

*EXTENDED PERIOD,  
SPLIT ATTENTION*

Normally, one team is begun at a time. This allows everyone to concentrate on a single team's problems and their solutions. Because of the unscheduled nature of training and a spec change that forced personnel changes into one of the groups, on floor follow-up had to be conducted on several teams during the same time frame.

**5.5 MODULE  
PLANNING**

*DONE PRIOR  
TO BEGINNING*

*ON-GOING PROCESS  
AS REQUIRED*

Module planning determines how things will be done. The process includes training a steering committee and letting them help to make the decisions. This is normally done at the beginning of the project. There were many things that have made the module plan be revised. The first is a change in personnel used

MAJOR PROCESS STEP OR TASK	BEST KNOWN PRACTICE	MD. CLOTHING ACTUAL PRACTICE
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to implement the project. Different people see things in different ways. The second is a change in spec that shifted the work content of at least two teams. The last is a major change in payroll application, due to local practices and needs. The payroll policy has undergone several revisions. To a large degree these have settled down, but they could become problems with new situations in team make-up.

<b>5.6 TEAM-SELF DEVELOPMENT</b>	<i>FULLY ACCEPTS RESPONSIBILITY</i>	<i>EXPECTS MGT. TO SOLVE PROBLEMS</i>
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With few exceptions, there is a path that all teams follow. In training, it is called the four stages of group development, forming, storming, norming, and performing. There is no set time period for a team to work through all these stages, but there is a direct correlation between these stages and team performance and morale, and ultimately, success.

At Maryland Clothing, no team is truly to the point of performing. They are in various stages. A brief description of where each team stands follows. **"Best of Ten"** is in the Norming stage. **"Eight is Enough"** is in the Norming stage. Both of these teams are learning how to work together. **"Quality Experts"** is in the Storming stage. They have not yet gotten past blaming each other. **"Finishing"** is still in the Forming stage. The new people they have added are trying to get themselves together.

MAJOR PROCESS STEP OR TASK	BEST KNOWN PRACTICE	MD. CLOTHING ACTUAL PRACTICE
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**"Best of Ten"** is at the stage of **Norming**. They are past the stage of complaining about everything. They have had some success, and know they can do well if everyone is present and performs. They are learning to cope with two problems they cannot solve... attendance and refusal of members to move to operations needing help.

They seem willing to put up with the attendance problem, but cannot address the issues of some team members not moving. At this point, they are aided by generous use of utility employees who buffer any losses. This use of utilities is a double-edged sword. While it keeps people working, it is expensive and prevents long-term solutions from being developed. In short, this team may be building in the use of utilities in their norm.

**"Eight is Enough"** is at the stage of **Norming**. They have a solid crew, with good skills, that can keep work moving well and in balance. One of the biggest gains in reduction of WIP has come in this area.

The biggest problems inside this group stem from the personalities of a few of the members. The members of the team cannot change the personalities of the people. For the most part, they ignore them, which is the best thing to do.

MAJOR PROCESS STEP OR TASK	BEST KNOWN PRACTICE	MD. CLOTHING ACTUAL PRACTICE
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However, there is spillover into other teams from these personalities. This is a problem that is beyond the scope of the team's charter. The team is concentrating on what they need to do,

Externally, problems for this team are the supply of work and a lack of supervisory understanding in how to address this. They have the ability to consistently do more work than the previous team. Because of this, they can catch up. If anyone is absent from the previous team, this team catches up even more quickly.

**"Finishing"** is still in the **forming** stage, because of changes in personnel. Luckily, they are close enough to success that their earnings have not suffered, but this closeness prevents them from uncovering future problems.

The biggest single problem now stems from a lack of trained people, but there are a number of potential problems looming for this team. The sources of the problem are the split nature of the team's workload and lack of flexibility on the part of some team members. The split nature of work assigned to the team means that they have to be aware of what is going into the team and what is coming out. This is sometimes difficult, but with a lack of trained people, it becomes virtually impossible to keep up with. The lack of flexibility keeps the team from overcoming absence and surges in work. Having at least three individuals who can move between the different sub-sections would insure success. Right now, there is only one person who routinely moves to keep work in balance.

MAJOR PROCESS STEP OR TASK	BEST KNOWN PRACTICE	MD. CLOTHING ACTUAL PRACTICE
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*"Quality Experts"* is in the **storming stage**. They have significant problems that range from a lack of agreement about pay and effort to a lack of understanding of how to work together.

Prior individual earnings in this group do not address the current contribution each individual makes to the team. This is somewhat true of all the teams, but it is especially true in this team. There was more than 100% difference between the lowest and highest earners in this group. This large difference coupled with a perception that pay and effort are not equitable has caused some of the people to lose motivation.

The second extreme involves people who are not working flat out. These people are pacing to the work that is given to them to do. This means that someone who is capable of 40 bundles only does, say, 36, because that is all that was given to her to do. The other 10% of this person's day is lost. A better use of the time would have been to spend time performing the operation that is needed. This is fundamental to good team performance, but is something that is worked out in norming.

<b>5.7</b>	<b>LEADERSHIP RESPONSIBILITY</b>	<b>FULLY TRANSFERRED</b>	<b>VERY LITTLE TRANSFER</b>
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Most plants take responsibility for leadership at some point in the process. The minimum hope is that plant leadership would be able to keep things going. The best hope is that major changes in process or personnel could still be handled.

<b>MAJOR PROCESS STEP OR TASK</b>	<b>BEST KNOWN PRACTICE</b>	<b>MD. CLOTHING ACTUAL PRACTICE</b>
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At this point, Maryland Clothing has not taken full responsibility for leadership. In some instances this has happened, but there is no module or instance where full responsibility is transferred away from CGA personnel. Without the minimum transfer there is little chance that Md. Clothing will be able to carry on the work done to date.

The Manufacturing VP and Pressing Supervisor have good knowledge about the people's needs. They are working to learn how to make moves that can be of help to the teams. They are very good at moving utility employees between teams, but this has been the extent of the need. The real thing that is missing is the internal coaching of the teams. This is the difference between "line supervision" and "team coaching". This is a new skill for most supervisors.

<b>5.8</b>	<b>TIME PER MODULE</b>	<i>180 Hours</i>	<i>325 Hours</i>
	<b>FOR INSTALLATION</b>		

The time required for making the conversion to modules has been far greater than normal. The time to install the first modules always takes longer, but this is usually offset on later modules. Maryland Clothing modules have taken longer, because of the training time being spread, the additional time required to get the payroll procedures in place, and the pressure on the company to perform at levels higher than those previously attained. While the actual time is greater than that normally experienced, the success of the installation has been assured with the extra expenditure of the time.

MAJOR PROCESS STEP OR TASK	BEST KNOWN PRACTICE	MD. CLOTHING ACTUAL PRACTICE
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Exhibit IX, Timeline, Planned versus Actual is a Gant chart showing key elements of time and how it was spent by CGA. This chart clearly shows that the tasks of developing the module plan, training the teams, as well as preparing this report fell further and further behind schedule. The increase in time obtained is shown as an additional amount of time on the chart. Exhibit X, pg. 1, shows the actual manpower loading document as the project was billed to the DPSC. There were considerable more hours worked than were billed. This is so that the cost of the first phase of the project was not greater than our budget.

**5.9 OVERALL GRADE** *On Budget, Ahead of Schedule, High Results* *Behind Budget, Behind Schedule, High Results*

While the time required to get the project implemented is longer than expected, the results have been excellent. The results are a more accurate measure of the benefits than are the costs.

Exhibit X, pg. 2 is the financial analysis of the CGA time and expenses versus budget. The time to complete this phase of the project exceeded the original budget, but the cost to the DPSC was virtually the same as budgeted. The original budget projection for CGA was \$146,000. The cost extension received for Lost Labor was \$35,263. This made the total budget \$181,263. The total attributable to Phase I is \$182,290.43. \$147,206.99 for consulting, and for Lost Labor, \$35,083.44. The total variance against the budget is \$1,027.43. Since a great deal of Planning for Phase II went into Phase I, this variance is expected to be more than made up.



***INSTALL MODULAR MANUFACTURING WORK TEAMS AT A DAM, PHASE I***

Future installations and continued installation at Maryland will reflect more accurately the costs, but the return on investment is still very high. If one statement could be made to sum up the project it would be: **A highly successful installation, but at a cost.**

## MODULE NAME = ASSEMBLY 1

Daily Work Schedule = 8.0  
Daily Production, Units = 480[illegible]

# MODULE LABOR BID WORKSHEET

Daily Work Schedule = 8.0  
Daily Production, Units = 480

[illegible]

# MODULE LABOR BID WORKSHEET

**MODULE NAME = ASSEMBLY 3**

Daily Work Schedule = 8.0  
Daily Production Units = 480

[illegible]

# MODULE LABOR BID WORKSHEET

Daily Work Schedule = 8.0      **MODULE NAME = ASSEMBLY 4**  
 Daily Production, Units = 480

[illegible]







# MODULE LABOR BID WORKSHEET

Daily Work Schedule = 8.0  
Daily Production, Units = 480

**MODULE NAME = QUALITY EXPERTS**

[illegible]



# MODULE LABOR BID WORKSHEET

Daily Work Schedule = 8.0

Daily Production, Units = 480.00

**MODULE NAME = BEST OF TEN**

[illegible]

# MODULE LABOR BID WORKSHEET

**MODULE NAME = EIGHT IS ENOUGH**

Daily Work Schedule = 8.0  
Daily Production, Units = 480

[illegible]

Daily Work Schedule = 8.0  
Daily Production, Units = 480

CGA PPFG T1-P1 Final Report

## **TEAM MEMBER TRAINING OUTLINE**

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### **I. Changing the Mindset**

- A. "The Calf Path".
- B. "Discovering the Future"...a Video on Paradigms.
- C. Paradigms in the Local Plant or Company.
- D. Proof that Paradigms are Extremely Strong and Invisible.
- E. Paradigm Recognition.
- F. Can Anything get Better Without Change?

### **II. Dr. Deming's 14 Points**

- A. Background on Dr. Deming.
- B. The 14 Points.

### **III. The Transformation ... From Lines to Modules**

- A. Push Versus Pull Methods of Manufacturing.
- B. The Hewlett Packard Video ... Stockless Production.
- C. What is Missing in the Hewlett Packard Video That is in Modular Manufacturing.

### **IV. General Statements about Modules**

- A. Group Dynamics.
- B. General Objectives of Modular.
- C. General Benefits of Modular.
- D. Orientation of the Organization.
- E. Stages of Group Development.

### **V. Motivation...from within or without?**

- A. Push versus Pull Motivation.
- B. Taylor's Approach.
- C. Macgregor's Approach.
- D. Maslow's Hierarchy of Needs.
- E. Hirschberg's Hygiene Theory.
- F. Why People Work.
- G. Leadership.
- H. Changing Role of Supervisor.

### **VI. Problem Solving**

- A. Desert Survival Exercise.
- B. Nominal Group Technique of Decision Making.
- C. Bob's Way to Solve a Problem.

## **Exhibit II**

- D. Choosing a Group Name Using Bob's Way.

### **VII. Team Leader and Team Meetings**

- A. Duties and Responsibilities of the Team Leader.
- B. The Team Meeting.
- C. Whose Responsibility is it?
- D. Team Meetings Discussion Topics.

### **VIII. Getting along in Modules**

- A. Communications, the Basic Elements.
- B. Road Blocks to Communication.
- C. Active Listening Skills.
- D. "The Art of Resolving Conflicts in the Workplace". (Video)
- E. "Blame it on the Work".
- F. "The Golden Rule in Modular Manufacturing".
- G. Strive to Understand, Then to be Understood.
- H. Class Exercise.

### **IX. Quality...Built into the Process**

- A. Continuous Process Improvement.
- B. The Group Approach to Quality Improvement.
- C. Count the M's Exercise.
- D. Quality Program for the Local Plant.
- E. What If?

### **X. Value-Added Concepts**

- A. Value-Added Labor Versus Non-Value Added.
- B. Competition and the Value Added Concept.
- C. Modular Seeks to Minimize the Non-Value Added Parts of Labor.

### **XI. Profit is not a Dirty Word**

- A. Profits are Essential to Organization Survival.
- B. The Pie Chart of a Company's Dollar.
- C. Absence, Turnover, Machine Trouble, etc., Have Always Cost us Money and the Company Profit. They were Just Hidden and we Could not Deal with it.
- D. Modular Manufacturing Allows the Effects of These Things to be Immediately Visible, the Group can Deal with it.

### **XII. Methods**

- A. The Uses of Methods.
- B. A Methods Checklist.
- C. Are Methods Different for Operations in Teams vs. Individual Incentives?

**XIII. Module Design for the Plant**

- A. Summary of Decisions Made by the Steering Committee.
- B. Other Write-ups on Local Plant.

**XIV. Module Pay Plan for Plant**

**XV. Team Goal Setting...The Bid Process**

- A. Setting Output Goals.
- B. Setting Operation Responsibility.
- C. Committing to the Group.

TABLE 1: ANALYSIS OF POTENTIAL LOST LABOR, MARYLAND CLOTHING, MODULAR PROJECT

LOADED WAGE RATE		TRAINING HOURS ANTICIPATED, BY TASK		
MD. CLOTHING, AVG. WAGE	\$ 8.130	HOURS OF CLASSROOM TRAINING		24.00
OVERTIME PREMIUM	\$ 4.065	HOURS OF CROSS TRAINING	40.00	
TOTAL HRLY WAGE	\$ 12.195	EFFICIENCY LEVEL, CROSSTRAIN	33.33%	
VARIABLE FRINGE BENEFITS	\$ 4.376	EFFECTIVE HOURS LOST		26.67
TOTAL HRLY WAGE	\$ 16.571	PER EMPLOYEE, HOURS LOST		50.67

## POTENTIAL LOST LABOR

PHASE I, LOST LABOR	PEOPLE*	WAGE	HOURS	EXTENSION
BASE WAGE	42	\$ 8.130	50.67	\$ 17,301
VARIABLE FRINGE BENEFITS	42	\$ 4.065	50.67	\$ 8,650
OVERTIME PREMIUM	42	\$ 4.376	50.67	\$ 9,312
TOTAL, NOT TO EXCEED...	42	\$ 16.571	50.67	\$ 35,263

\* There are now 41 people on roll, it is anticipated that at least 1 additional person will be trained.

## CALCULATION OF WAGE AMOUNTS AND ANNUAL BASE WAGE

CATEGORY	AMOUNT	DOCUMENTATION
Average Hourly Wage:	\$8.13	YTD Payroll Data, thru 3/01/97
Average Annual Wage:	\$ 14,979	47 wks., 40 hrs/week., 2% absence

## BUILD-UP OF VARIABLE FRINGE BENEFIT RATE

FRINGE BENEFIT ITEM			VARIABLE	FIXED**	SOURCE
Amalgamated, Retirement & Social Insurance			19.93%	0.00%	Contract
Amalgamated Regional Health & Welfare			2.00%	0.00%	Contract
Amalgamated, Retirement & Social Insurance \$16.67/Wk. 49 wks. = \$ 816.83 annually.			0.00%	5.45%	Contract
FICA			7.65%	0.00%	Federal
Futa			0.80%	0.00%	Federal
Muta			3.20%	0.00%	State
Holidays, 11 Per Year	\$ 715.44	4.78%	0	4.78%	Contract
Vacations, 15 Days	\$ 975.60	6.51%	0	6.51%	Contract
Workmans Comp			2.30%	0.00%	State Law
Total			35.88%	16.74%	

\*\*Reimbursement is being sought only for variable fringe benefits



**PROPOSED SPLIT INCENTIVE, UTILITY EMPLOYEES****METHOD I, A FIXED RATE PER HOUR PLUS A PERCENT OF TICKETS EARNED**

*Subtract \$1.50 per hour from the "Old Average". Add to this "New Average"*  
**33.3% of the Ticket Money Earned.**

A.	OLD HRLY. AVG.	NEW HRLY. AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	\$ 7.50	33%	\$ 3.25	\$ 1.08	\$ 8.57
	\$ 9.00	\$ 7.50	33%	\$ 4.00	\$ 1.33	\$ 8.82
	\$ 9.00	\$ 7.50	33%	\$ 6.00	\$ 2.00	\$ 9.48

*Subtract \$2.00 per hour from the "Old Average". Add to this "New Average"*  
**50.0% of the Ticket Money Earned.**

B.	OLD HRLY. AVG.	NEW HRLY. AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	\$ 7.00	50%	\$ 3.25	\$ 1.63	\$ 8.63
	\$ 9.00	\$ 7.00	50%	\$ 4.00	\$ 2.00	\$ 9.00
	\$ 9.00	\$ 7.00	50%	\$ 6.00	\$ 3.00	\$ 10.00

*Subtract \$2.50 per hour from the "Old Average". Add to this "New Average"*  
**65.0% of the Ticket Money Earned.**

C.	OLD HRLY. AVG.	NEW HRLY. AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	\$ 6.50	65%	\$ 3.25	\$ 2.11	\$ 8.61
	\$ 9.00	\$ 6.50	65%	\$ 4.00	\$ 2.60	\$ 9.10
	\$ 9.00	\$ 6.50	65%	\$ 6.00	\$ 3.90	\$ 10.40

*Subtract \$3.00 per hour from the "Old Average". Add to this "New Average"*  
**80.0% of the Ticket Money Earned.**

D.	OLD HRLY. AVG.	NEW HRLY. AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	\$ 6.00	80%	\$ 3.25	\$ 2.60	\$ 8.60
	\$ 9.00	\$ 6.00	80%	\$ 4.00	\$ 3.20	\$ 9.20
	\$ 9.00	\$ 6.00	80%	\$ 6.00	\$ 4.80	\$ 10.80

*Subtract \$3.50 per hour from the "Old Average". Add to this "New Average"*  
**100.0% of the Ticket Money Earned.**

	OLD HRLY. AVG.	NEW HRLY. AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	\$ 5.50	100%	\$ 3.25	\$ 1.08	\$ 8.75
	\$ 9.00	\$ 5.50	100%	\$ 4.00	\$ 1.33	\$ 9.50
	\$ 9.00	\$ 5.50	100%	\$ 6.00	\$ 2.00	\$ 11.50

TO SET UP THIS SYSTEM, KNOWLEDGE OF THE PERSON'S TRUE TICKET EARNINGS IS NECESSARY. THE IDEA IS  
 TO GIVE THE SAME EARNINGS POTENTIAL FOR THE SAME LEVEL OF HISTORIC OUTPUT.

\* FOR ANY OLD AVERAGE DIFFERENT FROM \$9.00, ADD OR SUBTRACT THE DIFFERENCE BETWEEN  
 THE DIFFERENT AVERAGE AND \$9.00 TO THE NEW FIXED HOURLY AVERAGE.

EXAMPLE, IF OLD AVG IS \$8.00, SUBTRACT \$1.00 FROM THE NEW FIXED RATE

(\$8.00-\$9.00)+\$6.50 = \$5.50 )

OLD AVG	NEW FIXED	TKT. %	IF TKTS. ARE	TKTS. PAID ARE	THEN PAY IS
\$ 8.00	\$ 5.50	65%	\$ 4.00	\$ 2.60	\$ 8.10

THE EXAMPLES ABOVE ARE USED ONLY FOR REFERENCE. THE BASIC PRINCIPLE IS TO PRESERVE  
 SOME PART OF THE OLD AVERAGE AS A NEW GUARANTEE. THE ABILITY TO EARN MORE BASED UPON  
 ACTUAL EARNINGS IS HOPED TO SPUR THE UTILITY EMPLOYEE INTO INCREASING OUTPUT.



## PROPOSED SPLIT INCENTIVE, UTILITY EMPLOYEES

### METHOD II, A PERCENTAGE OF HOURLY AVERAGE, PLUS PERCENTAGE OF TICKETS EARNED

#### *Pay 75% of Previous Average Plus 50% of Tickets Earned.*

A.	OLD HRLY. AVERAGE	PERCENT OF AVG.	HRLY. AMT. FROM AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	75%	\$ 6.75	50%	\$ 3.25	\$ 1.63	\$ 8.38
	\$ 9.00	75%	\$ 6.75	50%	\$ 4.00	\$ 2.00	\$ 8.75
	\$ 9.00	75%	\$ 6.75	50%	\$ 6.00	\$ 3.00	\$ 9.75

#### *Pay 67% of Previous Average Plus 67% of Tickets Earned.*

B.	OLD HRLY. AVERAGE	PERCENT OF AVG.	HRLY. AMT. FROM AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	67%	\$ 6.00	67%	\$ 3.25	\$ 2.17	\$ 8.17
	\$ 9.00	67%	\$ 6.00	67%	\$ 4.00	\$ 2.67	\$ 8.67
	\$ 9.00	67%	\$ 6.00	67%	\$ 6.00	\$ 4.00	\$ 10.01

#### *Pay 50% of Previous Average Plus 100% of Tickets Earned.*

C.	OLD HRLY. AVERAGE	PERCENT OF AVG.	HRLY. AMT. FROM AVG.	PERCENT OF TKTS.	HRLY. AMT. OF TKTS. EARNED	HRLY. AMT. OF TKTS. PAID	NEW HOURLY PAY
	\$ 9.00	50%	\$ 4.50	100%	\$ 3.25	\$ 3.25	\$ 7.75
	\$ 9.00	50%	\$ 4.50	100%	\$ 4.00	\$ 4.00	\$ 8.50
	\$ 9.00	50%	\$ 4.50	100%	\$ 6.00	\$ 6.00	\$ 10.50

TO SET UP THIS SYSTEM, KNOWLEDGE OF THE PERSON'S TRUE TICKET EARNINGS IS NECESSARY. THE IDEA IS TO GIVE THE SAME EARNINGS POTENTIAL FOR THE SAME LEVEL OF HISTORIC OUTPUT.

TO EXPERIMENT, JUST SUBSTITUTE THE NUMBERS YOU WOULD LIKE TO SEE WITH THE ONES LISTED ABOVE.

THE EXAMPLES ABOVE ARE USED ONLY FOR REFERENCE. THE BASIC PRINCIPLE IS TO PRESERVE SOME PART OF THE OLD AVERAGE AS A NEW GUARANTEE USING A PERCENTAGE. THE ABILITY TO EARN MORE BASED UPON ACTUAL EARNINGS IS HOPED TO SPUR THE UTILITY EMPLOYEE INTO INCREASING OUTPUT.

## PROPOSED SPLIT INCENTIVE, UTILITY EMPLOYEES

### METHOD III, A THRESHOLD APPROACH BASED UPON TICKET EARNINGS

*Simply find where the hourly earnings for the period fall, then move to the right column to find the amount to pay to the Utility.*

IF HOURLY AMOUNT OF TICKETS EARNED ARE		THEN HOURLY PAY IS
AT LEAST	BUT LESS THAN	
\$0.01	\$ 3.00	\$6.50
\$ 3.00	\$ 3.50	\$ 7.00
\$ 3.50	\$ 4.00	\$ 7.40
\$ 4.00	\$ 4.50	\$ 7.80
\$ 4.50	\$ 5.00	\$ 8.20
\$ 5.00	\$ 5.50	\$ 8.60

IF HOURLY AMOUNT OF TICKETS EARNED ARE		THEN HOURLY PAY IS
AT LEAST	BUT LESS THAN	
\$ 5.50	\$ 6.00	\$ 9.00
\$ 6.00	\$ 6.50	\$ 9.40
\$ 6.50	\$ 7.00	\$ 9.80
\$ 7.00	\$ 7.50	\$ 10.20
\$ 7.50	\$ 8.00	\$ 10.60
\$ 8.00	\$ 9.00	\$ 11.20

TO SET UP THIS SYSTEM, KNOWLEDGE OF THE PERSON'S TRUE TICKET EARNINGS IS NECESSARY. THE IDEA IS TO GIVE THE SAME EARNINGS POTENTIAL FOR THE SAME LEVEL OF HISTORIC OUTPUT.

THE THRESHOLD APPROACH IS A SIMPLE WAY TO APPLY AN INCENTIVE IN AREAS WHERE INFORMATION IS NOT REDILY AVAILABLE. IT IS SIMPLE WAY TO KNOW HOW MUCH WILL BE PAID FOR THE DIFFERENT EARNINGS LEVELS.

TO EXPERIMENT, JUST SUBSTITUTE THE NUMBERS YOU WOULD LIKE TO SEE WITH THE ONES LISTED ABOVE.

THE EXAMPLES ABOVE ARE USED ONLY FOR REFERENCE. THE BASIC PRINCIPLE IS TO PAY AT HIGHER LEVELS THAN ARE ACTUALLY EARNED. THE RESPONSIBILITY FOR PERFORMANCE IS PLACED UPON THE UTILITY TO EARN AS MUCH AS THEY CAN.

CGA PPFG T1-P1, Final Report

CLOCK NUMBER	NAME	HOURS WORKED	HOURS OFF-STD.	HOURS ON-STD.	OVERTIME HOURS	STYLE	PIECES PRODUCE	SAM's / PIECE	RATE / PIECE	P. RATE DOLLARS	# OF EMPLOYEES=	
5700	TERESA GUISTO	8.00		8.00	-		420	11.262	\$1.220	\$ 512.40	TEAM's PREV AVG=	106.7%
10700	LINA SVITCHER	8.00		8.00	-						AVG SAM/PC =	11.26154
10200	CHRISTINA AYALA	8.00		8.00	-						STD \$ / PC =	\$ 1.220
1800	TINA BANAI	4.75		4.75	-						PCS FOR 100% =	426.2
8750	CATHERINE OWEN	8.00		8.00	-						ACTUAL % =	102.7%
6460	PUI LAW	8.00		8.00	-							
7500	V. MACCARONE	8.00		8.00	-						EQUIV. UNITS =	438
3050	YI CHUNG	8.00		8.00	-		420	TOTAL	P. RATE \$	\$ 512.40	TEAM's OLD AVG=	454.8
2835	JUDY CARRICK	8.00		8.00	-	OFF			OFF STD: \$	-	INCUMBENT REDUCER =	
8550	MARDIE NAYLOR	8.00		8.00	-							
#11				-	-							
#12				-	-							
#13				-	-							
#14				-	-							
#15				-	-							
	Totals	76.75	-	76.75								
CLOCK NUMBER	NAME	HOURS WORKED	INCUMB ADJUST	EARNINGS SPLIT	TOTAL PAY	EARNING / HOUR	OLD AVERAGE	difference				
5700	TERESA GUISTO	8.00	\$ 14.64	\$ 53.41	68.05	\$ 8.51	\$ 8.76	\$ (0.25)				
10700	LINA SVITCHER	8.00	\$ 14.24	\$ 53.41	67.65	\$ 8.46	\$ 8.71	\$ (0.25)				
10200	CHRISTINA AYALA	8.00	\$ 15.76	\$ 53.41	69.17	\$ 8.65	\$ 8.90	\$ (0.25)				
1800	TINA BANAI	4.75	\$ 8.98	\$ 31.71	40.69	\$ 8.57	\$ 8.82	\$ (0.25)				
8750	CATHERINE OWEN	8.00	\$ -	\$ 53.41	53.41	\$ 6.68	\$ 6.12	\$ 0.56				
6460	PUI LAW	8.00	\$ -	\$ 53.41	53.41	\$ 6.68	\$ 6.63	\$ 0.05				
7500	V. MACCARONE	8.00	\$ 32.40	\$ 53.41	85.81	\$ 10.73	\$ 10.98	\$ (0.25)				
3050	YI CHUNG	8.00	\$ 4.56	\$ 53.41	57.97	\$ 7.25	\$ 7.50	\$ (0.25)				
2835	JUDY CARRICK	8.00	\$ 26.64	\$ 53.41	80.05	\$ 10.01	\$ 10.26	\$ (0.25)				
8550	MARDIE NAYLOR	8.00	\$ 11.84	\$ 53.41	65.25	\$ 8.16	\$ 8.41	\$ (0.25)				
#11		-	\$ -	\$ -	-	\$ -	\$ -	\$ -				
#12		-	\$ -	\$ -	-	\$ -	\$ -	\$ -				
#13		-	\$ -	\$ -	-	\$ -	\$ -	\$ -				
#14		-	\$ -	\$ -	-	\$ -	\$ -	\$ -				
#15		-	\$ -	\$ -	-	\$ -	\$ -	\$ -				
	Totals	76.75	\$ 129.06	\$ 512.40	641.46							
				\$ 641.46								
				\$ 1.527								

CLOCK NUMBER	NAME	HOURS WORKED	HOURS OFF-STD	HOURS ON-STD	OVERTIME HOURS	STYLE	PIECES PRODUCE	SAM's / PIECE	RATE / PIECE	P. RATE DOLLARS	# OF EMPLOYEES=	10
5700	TERESA GUISTO	8.00		8.00	-		480	11.262	\$1,220	\$ 585.60	TEAM's PREV AVG=	106.7%
10700	LINA SVITCHER	8.00		8.00	-						AVG SAM/PC =	11.26154
10200	CHRISTINA AYALA	8.00		8.00	-						STD \$ / PC =	\$ 1,220
1800	TINA BANAI	8.00		8.00	-						PCS FOR 100% =	426.2
8750	CATHERINE OWEN	8.00		8.00	-						ACTUAL % =	112.6%
6460	PUI LAW	8.00		8.00	-							
7500	V. MACCARONE	8.00		8.00	-						EQUIV. UNITS =	480
3050	YI CHUNG	8.00		8.00	-						TEAM's OLD AVG=	454.8
2835	JUDY CARRICK	8.00		8.00	-	OFF	480	TOTAL P. RATE \$	585.60			
8550	MARDIE NAYLOR	8.00		8.00	-				OFF STD: \$		INCUMBENT REDUCER =	0.0961
#11				-	-							
#12				-	-				TOTAL PAID \$	585.60		
#13				-	-							
#14				-	-							
#15				-	-							
	Totals	80.00	-	80.00	-							
CLOCK NUMBER	NAME	HOURS WORKED	INCUMB ADJUST	EARNINGS SPLIT	TOTAL PAY	EARNING / HOUR	OLD AVERAGE	difference				
5700	TERESA GUISTO	8.00	\$ 13.87	\$ 58.56	\$ 72.43	\$ 9.05	\$ 8.76	\$ 0.29				
10700	LINA SVITCHER	8.00	\$ 13.47	\$ 58.56	\$ 72.03	\$ 9.00	\$ 8.71	\$ 0.29				
10200	CHRISTINA AYALA	8.00	\$ 14.99	\$ 58.56	\$ 73.55	\$ 9.19	\$ 8.90	\$ 0.29				
1800	TINA BANAI	8.00	\$ 14.35	\$ 58.56	\$ 72.91	\$ 9.11	\$ 8.82	\$ 0.29				
8750	CATHERINE OWEN	8.00	\$ -	\$ 58.56	\$ 58.56	\$ 7.32	\$ 6.12	\$ 1.20				
6460	PUI LAW	8.00	\$ -	\$ 58.56	\$ 58.56	\$ 7.32	\$ 6.63	\$ 0.69				
7500	V. MACCARONE	8.00	\$ 31.63	\$ 58.56	\$ 90.19	\$ 11.27	\$ 10.98	\$ 0.29				
3050	YI CHUNG	8.00	\$ 3.79	\$ 58.56	\$ 62.35	\$ 7.79	\$ 7.50	\$ 0.29				
2835	JUDY CARRICK	8.00	\$ 25.87	\$ 58.56	\$ 84.43	\$ 10.55	\$ 10.26	\$ 0.29				
8550	MARDIE NAYLOR	8.00	\$ 11.07	\$ 58.56	\$ 69.63	\$ 8.70	\$ 8.41	\$ 0.29				
#11		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#12		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#13		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#14		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#15		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
	Totals	80.00	\$ 129.04	\$ 585.60	\$ 714.64							
				\$ 714.64								
				\$ 1,489								

CLOCK NUMBER	NAME	HOURS WORKED	HOURS OFF-STD	HOURS ON-STD	OVERTIME HOURS	STYLE	PIECES PRODUCE	SAM's / PIECE	RATE / PIECE	P. RATE DOLLARS	# OF EMPLOYEES=	10
5700	TERESA GUISTO	8.00	-	8.00	-		444	11.262	\$1.220	\$ 541.68	TEAM's PREV AVG=	106.7%
10700	LINA SVITCHER	8.00	-	8.00	-						AVG SAM/PC =	11.26154
10200	CHRISTINA AYALA	8.00	-	8.00	-						STD \$ / PC =	\$ 1.220
1800	TINA BANAI	8.00	-	8.00	-						PCS FOR 100% =	426.2
8750	CATHERINE OWEN	8.00	-	8.00	-						ACTUAL % =	104.2%
6460	PUI LAW	8.00	-	8.00	-							
7500	V. MACCARONE	8.00	-	8.00	-						EQUIV. UNITS =	444
3050	YI CHUNG	8.00	-	8.00	-						TEAM's OLD AVG=	454.8
2835	JUDY CARRICK	8.00	-	8.00	-	OFF	444	TOTAL	P. RATE \$	\$ 541.68		
8550	MARDIE NAYLOR	8.00	-	8.00	-				OFF STD:	\$ -	INCUMBENT REDUCER =	
#11												
#12												
#13												
#14												
#15												
Totals		80.00	-	80.00	-							
CLOCK NUMBER	NAME	HOURS WORKED	INCUMB ADJUST	EARNINGS SPLIT	TOTAL PAY	EARNING / HOUR	OLD AVERAG	difference				
5700	TERESA GUISTO	8.00	\$ 14.64	\$ 54.17	\$ 68.81	\$ 8.60	\$ 8.76	\$ (0.16)				
10700	LINA SVITCHER	8.00	\$ 14.24	\$ 54.17	\$ 68.41	\$ 8.55	\$ 8.71	\$ (0.16)				
10200	CHRISTINA AYALA	8.00	\$ 15.76	\$ 54.17	\$ 69.93	\$ 8.74	\$ 8.90	\$ (0.16)				
1800	TINA BANAI	8.00	\$ 15.12	\$ 54.17	\$ 69.29	\$ 8.66	\$ 8.82	\$ (0.16)				
8750	CATHERINE OWEN	8.00	\$ -	\$ 54.17	\$ 54.17	\$ 6.77	\$ 6.12	\$ 0.65				
6460	PUI LAW	8.00	\$ -	\$ 54.17	\$ 54.17	\$ 6.77	\$ 6.63	\$ 0.14				
7500	V. MACCARONE	8.00	\$ 32.40	\$ 54.17	\$ 86.57	\$ 10.82	\$ 10.98	\$ (0.16)				
3050	YI CHUNG	8.00	\$ 4.56	\$ 54.17	\$ 58.73	\$ 7.34	\$ 7.50	\$ (0.16)				
2835	JUDY CARRICK	8.00	\$ 26.64	\$ 54.17	\$ 80.81	\$ 10.10	\$ 10.26	\$ (0.16)				
8550	MARDIE NAYLOR	8.00	\$ 11.84	\$ 54.17	\$ 66.01	\$ 8.25	\$ 8.41	\$ (0.16)				
#11		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#12		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#13		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#14		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#15		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
Totals		80.00	\$ 135.20	\$ 541.70	\$ 676.90							
				\$ 676.90								
				\$ 1.525								

CLOCK NUMBER	NAME	HOURS WORKED	HOURS OFF-STD	HOURS ON-STD	OVERTIME HOURS	STYLE	PIECES PRODUCE	SAM'S / PIECE	RATE / PIECE	P. RATE DOLLARS	# OF EMPLOYEES=	10
5700	TERESA GUISTO	8.00	-	8.00	-		480	11.262	\$ 1.220	\$ 585.60	TEAM'S PREV AVG=	106.7%
10700	LINA SVITCHER	8.00	-	8.00	-						AVG SAM/PC =	11.26154
10200	CHRISTINA AYALA	8.00	-	8.00	-						STD \$ / PC =	\$ 1.220
1800	TINA BANAI	8.00	-	8.00	-						PCS FOR 100% =	426.2
8750	CATHERINE OWEN	8.00	-	8.00	-						ACTUAL % =	112.6%
6460	PUI LAW	8.00	-	8.00	-						EQUIV. UNITS =	480
7500	V. MACCARONE	8.00	-	8.00	-						TEAM'S OLD AVG=	454.8
3050	YI CHUNG	8.00	-	8.00	-							
2835	JUDY CARRICK	8.00	-	8.00	-	OFF						
8550	MARDIE NAYLOR	8.00	-	8.00	-						INCUMBENT REDUCER =	0.0961
#11												
#12												
#13												
#14												
#15												
Totals		80.00	-	80.00	-							
CLOCK NUMBER	NAME	HOURS WORKED	INCUMB ADJUST	EARNINGS SPLIT	TOTAL PAY	EARNING / HOUR	OLD AVERAG	difference				
5700	TERESA GUISTO	8.00	\$ 13.87	\$ 58.56	\$ 72.43	\$ 9.05	\$ 8.76	\$ 0.29				
10700	LINA SVITCHER	8.00	\$ 13.47	\$ 58.56	\$ 72.03	\$ 9.00	\$ 8.71	\$ 0.29				
10200	CHRISTINA AYALA	8.00	\$ 14.99	\$ 58.56	\$ 73.55	\$ 9.19	\$ 8.90	\$ 0.29				
1800	TINA BANAI	8.00	\$ 14.35	\$ 58.56	\$ 72.91	\$ 9.11	\$ 8.82	\$ 0.29				
8750	CATHERINE OWEN	8.00	\$ -	\$ 58.56	\$ 58.56	\$ 7.32	\$ 6.12	\$ 1.20				
6460	PUI LAW	8.00	\$ -	\$ 58.56	\$ 58.56	\$ 7.32	\$ 6.63	\$ 0.69				
7500	V. MACCARONE	8.00	\$ 31.63	\$ 58.56	\$ 90.19	\$ 11.27	\$ 10.98	\$ 0.29				
3050	YI CHUNG	8.00	\$ 3.79	\$ 58.56	\$ 62.35	\$ 7.79	\$ 7.50	\$ 0.29				
2835	JUDY CARRICK	8.00	\$ 25.87	\$ 58.56	\$ 84.43	\$ 10.55	\$ 10.26	\$ 0.29				
8550	MARDIE NAYLOR	8.00	\$ 11.07	\$ 58.56	\$ 69.63	\$ 8.70	\$ 8.41	\$ 0.29				
#11		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#12		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#13		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#14		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#15		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
Totals		80.00	\$ 129.04	\$ 585.60	\$ 714.64							
				\$ 714.64								
				\$ 1.489								



CLOCK NUMBER	NAME	HOURS WORKED	HOURS OFF-STD	HOURS ON-STD	OVERTIME HOURS	STYLE	PIECES PRODUCE	SAM's / PIECE	RATE / PIECE	P. RATE DOLLARS	# OF EMPLOYEES =	10
5700	TERESA GUISTO	8.00	-	8.00	-		408	11.262	\$ 1.220	\$ 497.76	TEAM's PREV AVG =	106.7%
10700	LINA SVITCHER	8.00	-	8.00	-						AVG SAM/PC =	11.26154
10200	CHRISTINA AYALA	8.00	-	8.00	-						STD \$ / PC =	\$ 1.220
1800	TINA BANAI	8.00	-	8.00	-						PCS FOR 100% =	426.2
8750	CATHERINE OWEN	8.00	-	8.00	-						ACTUAL % =	95.7%
6460	PUI LAW	8.00	-	8.00	-						EQUIV. UNITS =	408
7500	V. MACCARONE	8.00	-	8.00	-						TEAM's OLD AVG =	454.8
3050	YI CHUNG	8.00	-	8.00	-							
2835	JUDY CARRICK	8.00	-	8.00	-	OFF						
8550	MARDIE NAYLOR	8.00	-	8.00	-						INCUMBENT REDUCER =	
#11				-	-							
#12				-	-							
#13				-	-							
#14				-	-							
#15				-	-							
Totals		80.00	-	80.00								
CLOCK NUMBER	NAME	HOURS WORKED	INCUMB ADJUST	EARNINGS SPLIT	TOTAL PAY	EARNING / HOUR	OLD AVERAG	difference				
5700	TERESA GUISTO	8.00	\$ 14.64	\$ 49.78	\$ 64.42	\$ 8.05	\$ 8.76	\$ (0.71)				
10700	LINA SVITCHER	8.00	\$ 14.24	\$ 49.78	\$ 64.02	\$ 8.00	\$ 8.71	\$ (0.71)				
10200	CHRISTINA AYALA	8.00	\$ 15.76	\$ 49.78	\$ 65.54	\$ 8.19	\$ 8.90	\$ (0.71)				
1800	TINA BANAI	8.00	\$ 15.12	\$ 49.78	\$ 64.90	\$ 8.11	\$ 8.82	\$ (0.71)				
8750	CATHERINE OWEN	8.00	\$ -	\$ 49.78	\$ 49.78	\$ 6.22	\$ 6.12	\$ 0.10				
6460	PUI LAW	8.00	\$ -	\$ 49.78	\$ 49.78	\$ 6.22	\$ 6.63	\$ (0.41)				
7500	V. MACCARONE	8.00	\$ 32.40	\$ 49.78	\$ 82.18	\$ 10.27	\$ 10.98	\$ (0.71)				
3050	YI CHUNG	8.00	\$ 4.56	\$ 49.78	\$ 54.34	\$ 6.79	\$ 7.50	\$ (0.71)				
2835	JUDY CARRICK	8.00	\$ 26.64	\$ 49.78	\$ 76.42	\$ 9.55	\$ 10.26	\$ (0.71)				
8550	MARDIE NAYLOR	8.00	\$ 11.84	\$ 49.78	\$ 61.62	\$ 7.70	\$ 8.41	\$ (0.71)				
#11		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#12		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#13		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#14		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#15		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
Totals		80.00	\$ 135.20	\$ 497.80	\$ 633.00							
				\$ 633.00								
				\$ 1.551								



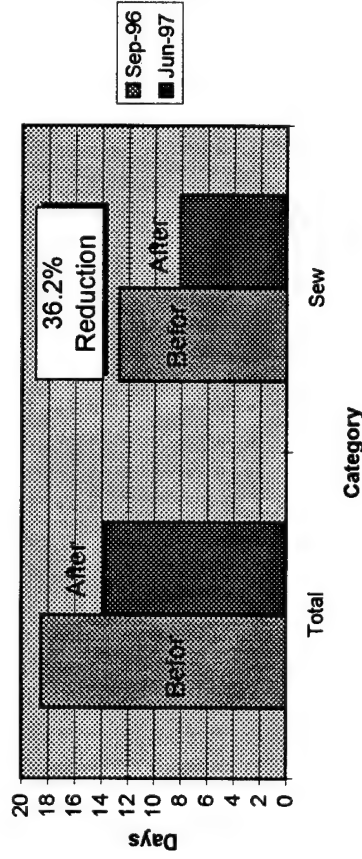
CLOCK NUMBER	NAME	HOURS WORKED	HOURS OFF-STD.	HOURS ON-STD.	OVERTIME HOURS	STYLE	PIECES PRODUCE	SAM's / PIECE	RATE / PIECE	P. RATE DOLLARS	# OF EMPLOYEES=	10
5700	TERESA GUISTO	-	-	-	-			11.262	\$1,220	\$	TEAM'S PREV AVG=	106.7%
10700	LINA SVITCHER	-	-	-	-						AVG SAM/PC =	#DIV/0!
10200	CHRISTINA AYALA	-	-	-	-						STD \$ / PC =	#DIV/0!
1800	TINA BANAI	-	-	-	-						PCS FOR 100% =	#DIV/0!
8750	CATHERINE OWENS	-	-	-	-						ACTUAL % =	#DIV/0!
6460	PUI LAW	-	-	-	-						EQUIV. UNITS =	#DIV/0!
7500	V. MACCARONE	-	-	-	-						TEAM'S OLD AVG=	#DIV/0!
3050	YI CHUNG	-	-	-	-						INCUMBENT REDUCER =	#DIV/0!
2835	JUDY CARRICK	-	-	-	-	OFF						
8550	MARDIE NAYLOR	-	-	-	-							
#11		-	-	-	-							
#12		-	-	-	-							
#13		-	-	-	-							
#14		-	-	-	-							
#15		-	-	-	-							
Totals		-	-	-	-							
CLOCK NUMBER	NAME	HOURS WORKED	INCUMB ADJUST	EARNINGS SPLIT	TOTAL PAY	EARNING / HOUR	OLD AVERAG	difference				
5700	TERESA GUISTO	-	\$ -	\$ -	\$ -	\$ -	\$ 8.76	\$ (8.76)				
10700	LINA SVITCHER	-	\$ -	\$ -	\$ -	\$ -	\$ 8.71	\$ (8.71)				
10200	CHRISTINA AYALA	-	\$ -	\$ -	\$ -	\$ -	\$ 8.90	\$ (8.90)				
1800	TINA BANAI	-	\$ -	\$ -	\$ -	\$ -	\$ 8.82	\$ (8.82)				
8750	CATHERINE OWEN	-	\$ -	\$ -	\$ -	\$ -	\$ 6.12	\$ (6.12)				
6460	PUI LAW	-	\$ -	\$ -	\$ -	\$ -	\$ 6.63	\$ (6.63)				
7500	V. MACCARONE	-	\$ -	\$ -	\$ -	\$ -	\$ 10.98	\$ (10.98)				
3050	YI CHUNG	-	\$ -	\$ -	\$ -	\$ -	\$ 7.50	\$ (7.50)				
2835	JUDY CARRICK	-	\$ -	\$ -	\$ -	\$ -	\$ 10.26	\$ (10.26)				
8550	MARDIE NAYLOR	-	\$ -	\$ -	\$ -	\$ -	\$ 8.41	\$ (8.41)				
#11		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#12		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#13		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#14		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
#15		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
Totals		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				

CLOCK NUMBER	NAME	CONVR RATE	1997 AVERAGE	BONUS per HOUR	AVERAGE (-) BONUS	AVG %	AVG. \$ @	INCUMBENT DIFFERENC	PREMIUM RATE	HOLD UP ADJUSTMENT	SCHEDULED HOURS:	BASE RATE: \$
										MINIMUM WAGE		
5700	TERESA GUISTO	\$6,744	\$ 8.76	\$ 0.70	\$ 8.06	119.5%	\$6.93	\$1.13	\$1.83			\$ 6.50
10700	LINA SVITCHER	\$6,744	\$ 8.71	\$ 0.50	\$ 8.21	121.7%	\$6.93	\$1.28	\$1.78			40
10200	CHRISTINA AYALA	\$7,500	\$ 8.90	\$ 0.30	\$ 8.60	114.7%	\$6.93	\$1.67	\$1.97			
1800	TINA BANAI	\$7,578	\$ 8.82	\$ 0.70	\$ 8.12	107.2%	\$6.93	\$1.19	\$1.89			
8750	CATHERINE OWENS	\$7,002	\$ 6.12	\$ 0.70	\$ 5.42	77.4%	\$6.93	(\$1.51)	\$0.00			
6460	PUI LAW	\$7,002	\$ 6.63	\$ -	\$ 6.63	94.7%	\$6.93	(\$0.30)	\$0.00			
7500	V. MACCARONE	\$8,826	\$ 10.98	\$ 0.70	\$ 10.28	116.5%	\$6.93	\$3.35	\$4.05			
3050	YI CHUNG	\$7,500	\$ 7.50	\$ 0.40	\$ 7.10	94.7%	\$6.93	\$0.17	\$0.57			
2835	JUDY CARRICK	\$7,998	\$ 10.26	\$ 0.70	\$ 9.56	119.5%	\$6.93	\$2.63	\$3.33			
8550	MARDIE NAYLOR	\$7,632	\$ 8.41	\$ 0.70	\$ 7.71	101.0%	\$6.93	\$0.78	\$1.48			
#11					\$ -	FALSE	FALSE	\$0.00	\$0.00			
#12					\$ -	FALSE	FALSE	\$0.00	\$0.00			
#13					\$ -	FALSE	FALSE	\$0.00	\$0.00			
#14					\$ -	FALSE	FALSE	\$0.00	\$0.00			
#15					\$ -	FALSE	FALSE	\$0.00	\$0.00			
10	TOTALS		\$ 8.51			106.69%			\$1.69			

## PHASE I, KEY PERFORMANCE BENCHMARKS

Pg. 1 of 3

### DAYS IN PLANT



**DAYS IN PLANT** is the number of working days a bundle of garments is in the plant.

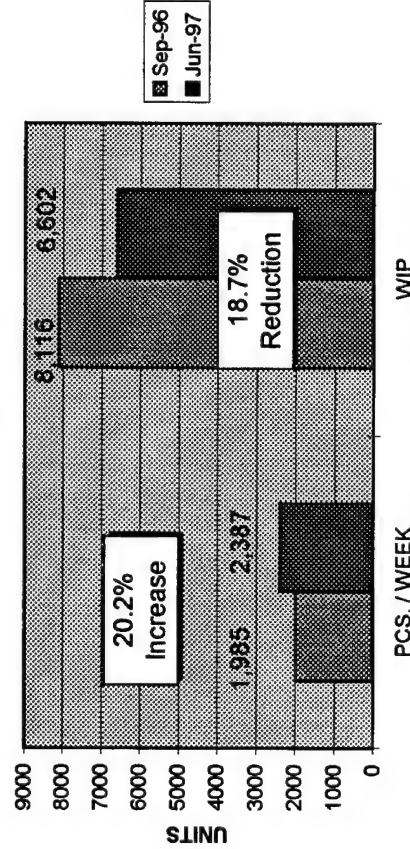
**TOTAL** includes Cutting and Sewing and Finishing. It includes all time once an order is reported cut.

**SEW** includes Sewing and Finishing. It includes time once a bundle is begun, until it is completed.

### KEY OBSERVATIONS

The reduction of 36.2% has virtually all come from the area of the plant covered by Phase I. The THROUPUT graph, presented later, presents this more clearly.

### UNITS VOLUME FIGURES



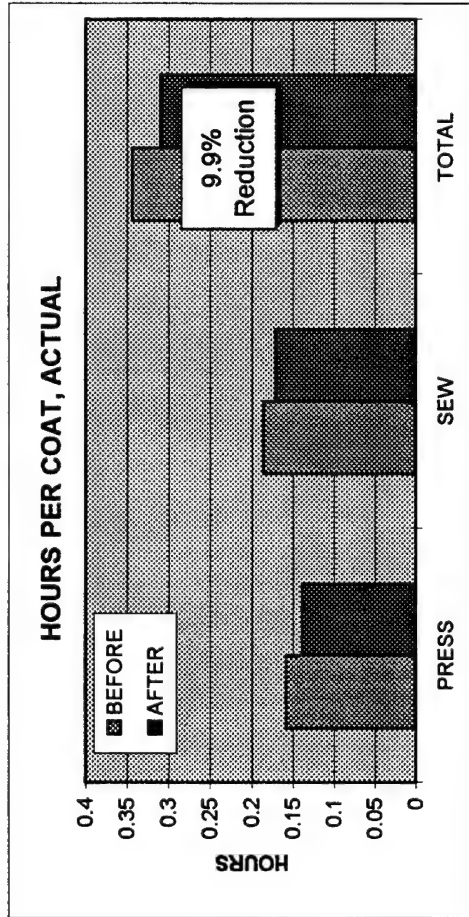
**PIECES PRODUCED PER WEEK** is an attempt to state production on a full week basis. It is the daily average multiplied by five.

**WIP** is work in process. It is the number of pieces cut but not finished.

### KEY OBSERVATIONS

Units produced is up significantly, 20.2%, from the base period. The increase is across the plant, but the non-team area of the plant has had greater difficulty in achieving the increase, notably turnover. WIP reduction is entirely in the area of the plant affected by Phase I.

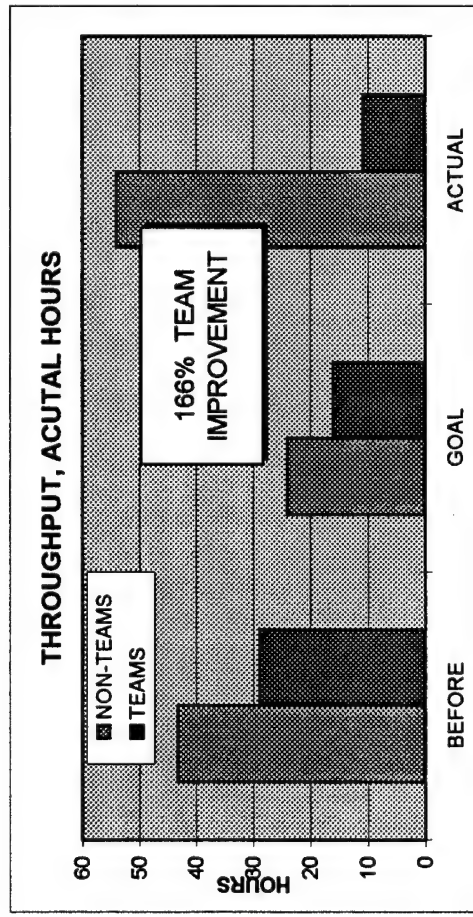
## PHASE I, KEY PERFORMANCE BENCHMARKS



**HOURS PER COATS, ACTUAL** is obtained by dividing actual hours worked doing the operations contained in the two completed modules by pieces produced by the modules. Both pressing and sewing have shown a real reduction in hours per coat.

### KEY OBSERVATION

There is a real decrease in hours per unit. This means there is a real increase in productivity of the same amount. The figure of 9.9% is considered to be typical, even though the two module's previous performance was well above 100%.



**THROUGHPUT, ACTUAL HOURS** is a way of stating the time required to get a bundle through the operations.

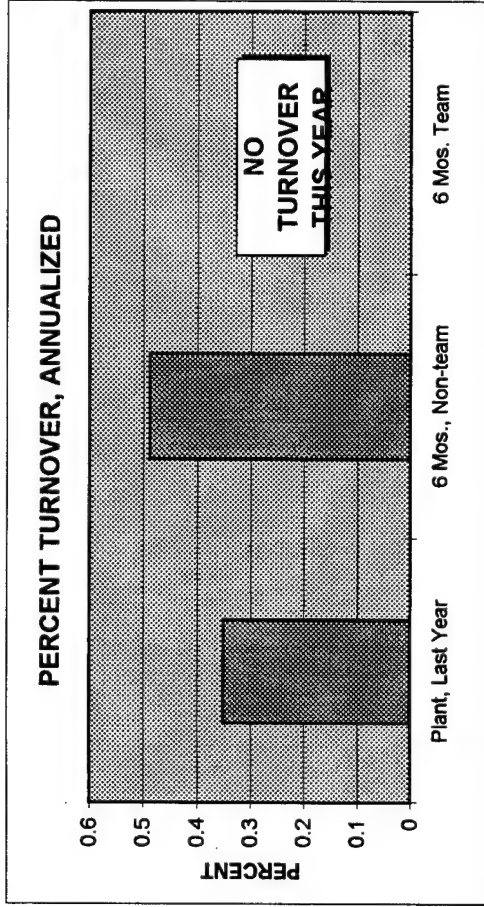
**BEFORE** is an average of 7.2 hours per module. This was from the base data collected before Phase I began. **GOAL** is an average of 4.0 hours per module. This was the projection from the original technical proposal.

**ACTUAL** is the number of bundles before and present in the teams divided by the current output of the teams.

### KEY OBSERVATION

The increase in throughput is extraordinary. The 166% team improvement is more than was anticipated. The actual team result is 32.5% better than the goal.

## PHASE I, KEY PERFORMANCE BENCHMARKS



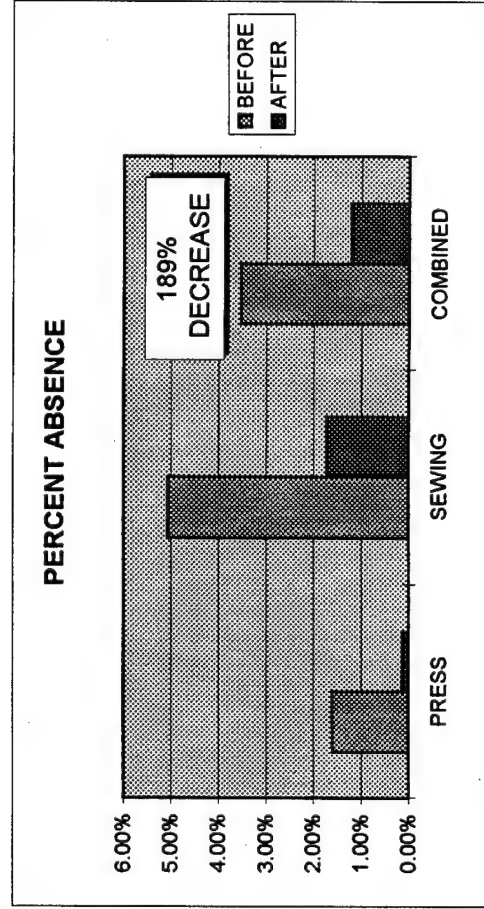
PERCENT ANNUALIZED TURNOVER is the number of people terminated divided by the number of people on roll.

6 MONTH, NON-TEAM is the turnover in the area not affected by Phase I. This turnover reflects the hiring needed to increase production in the area.

### KEY OBSERVATION

There has been no turnover in the employees covered by Phase I with the exception of one planned retirement. If this is included, annualized turnover would be 4.9%.

PERCENT ABSENCE is the difference between hours available ( plant schedule multiplied by people on roll) and actual hours worked, divided by hours available.



### KEY OBSERVATION

Attendance at Maryland Clothing is excellent overall, because management aggressively manages this. Even with this, absence is reduced significantly in teams. This is seen as a sign of improved morale of people in the teams.

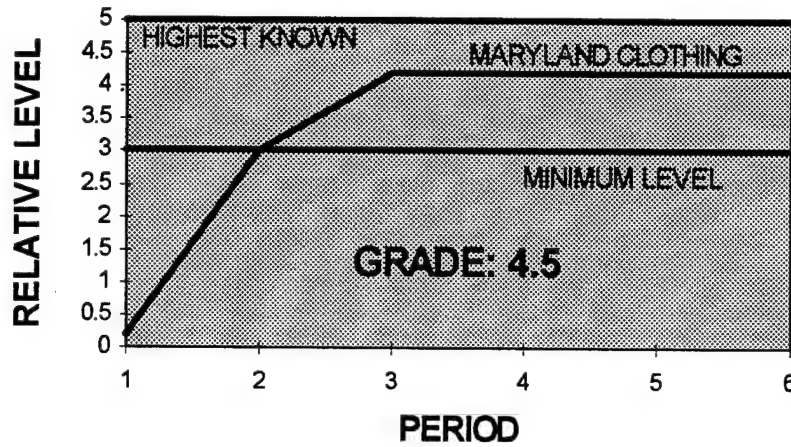


## SUMMARY OF PHASE I MODULE SCOPE AND PHASE II PLAN

MODULE	GENERIC NAME	TEAM NAME	MEMBERS	OPERATIONS	FIRST OPERATION	LAST OPERATION	SCOPE
10	PRESSING	EIGHT IS ENOUGH	8	8	Carousel Press Fronts	Press Edges & Corners.	Does all Final Pressing of the coats
9	FINISHING		13	7	Pull Basting	Clean, Examine, & Repair	Group is Split. The first part pulls the basting stitching. The second part adds buttons, examines, trims, and prepares the coat for auditing.
8	ASSEMBLY 8	BEST OF TEN	10	8	Baste Armholes	Close Sleeve Linings	Completes the sewing of the coats. This group finishes the armholes, tacks, and finishes the sleeve lining
7	ASSEMBLY 7	QUALITY EXPERTS	10	11	Baste Undercollar	Press Armhole	Makes the sleeve pre-assemblies, finishes the collars, and adds the sleeves to the coats.
4	PHASE I TOTALS		41	34	Baste Undercollar	Clean, Examine, & Repair	The back part of the plant. This insures that module work sucks the work out of the plant rather than building up a stock of work
6	PHASE II	PLANNED	70	89	Book Side Body	Mark Collar Width	Begins the sewing process, makes and adds all sub-assemblies except the sleeves and shields.

Exhibit VIII

## TEAM SELECTION PROCESS

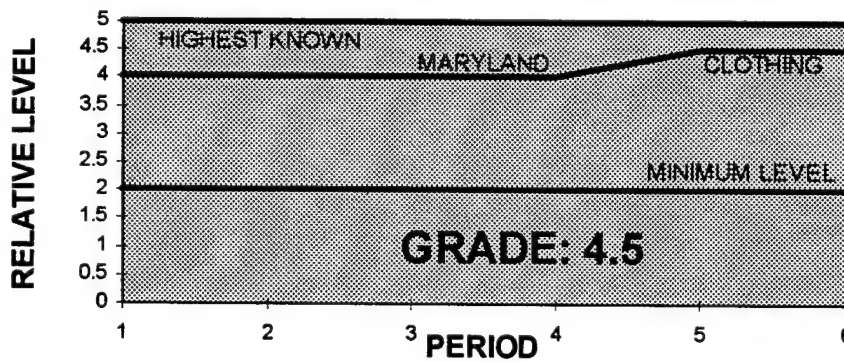


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

Exhibit VIII

## MODULE PLANNING

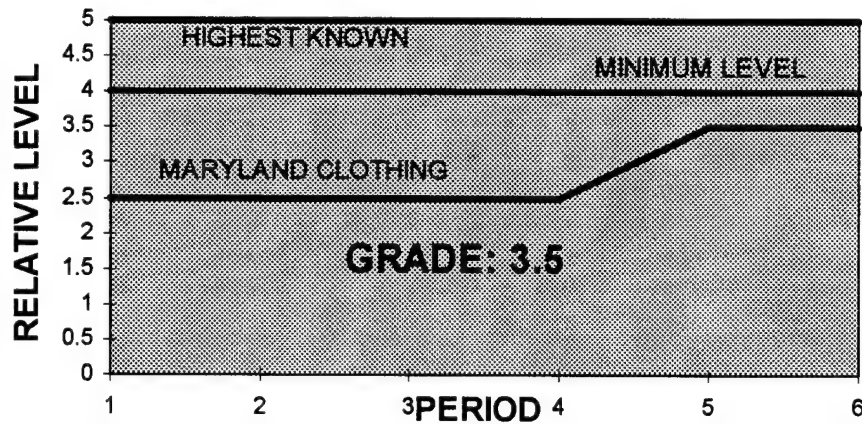


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

Exhibit VIII

## CLASSROOM TRAINING

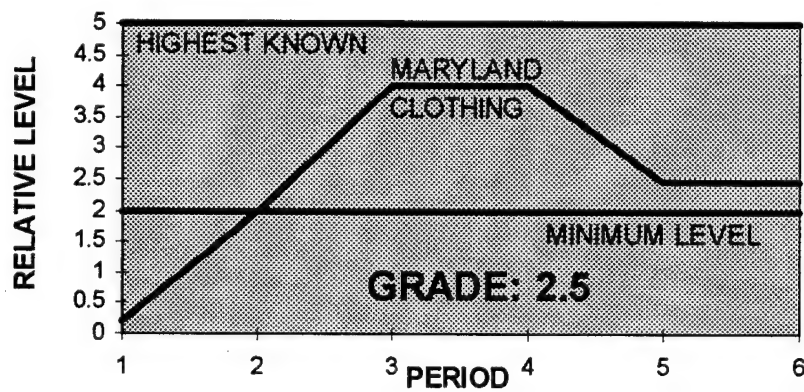


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

Exhibit VIII

## ON-FLOOR FOLLOW-UP



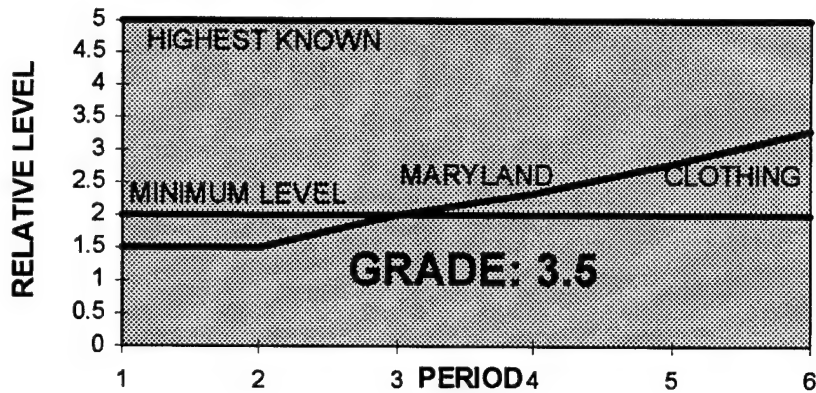
MdPerformance.ppt

CGA PPFG T1-P1, Final Report



Exhibit VIII

## TEAM DEVELOPMENT

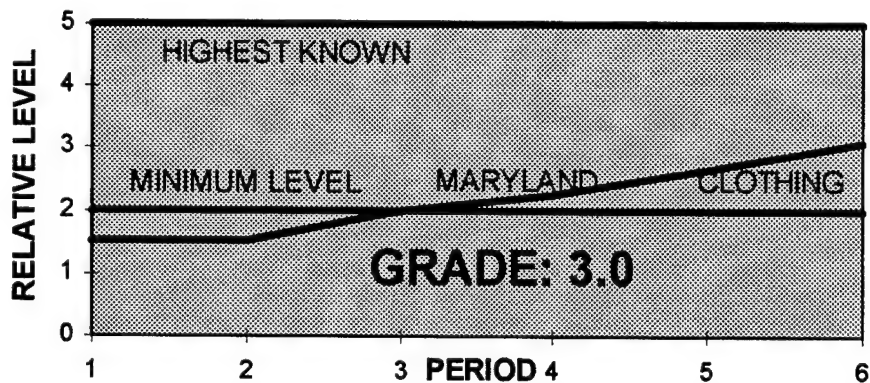


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

Exhibit VIII

## LEADERSHIP RESPONSIBILITY

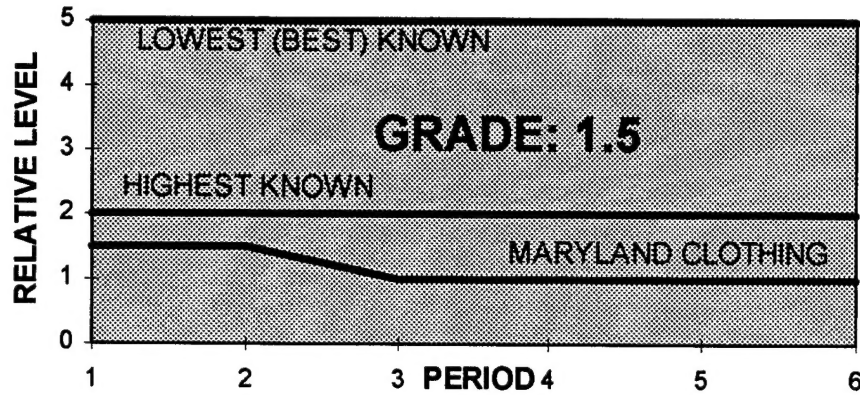


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

Exhibit VIII

## TIME PER MODULE

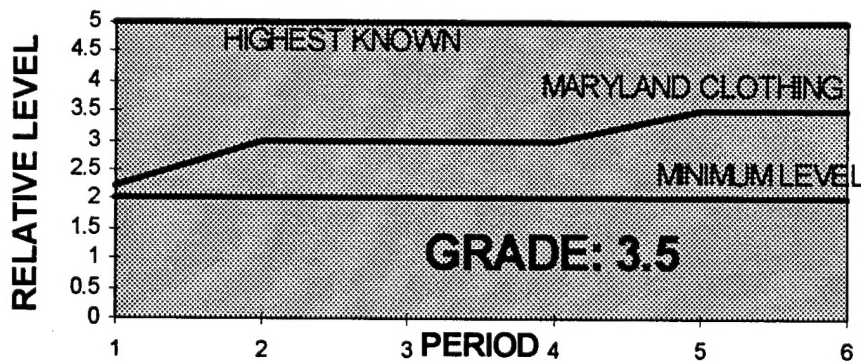


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

Exhibit VIII

## OVERALL INSTALLATION

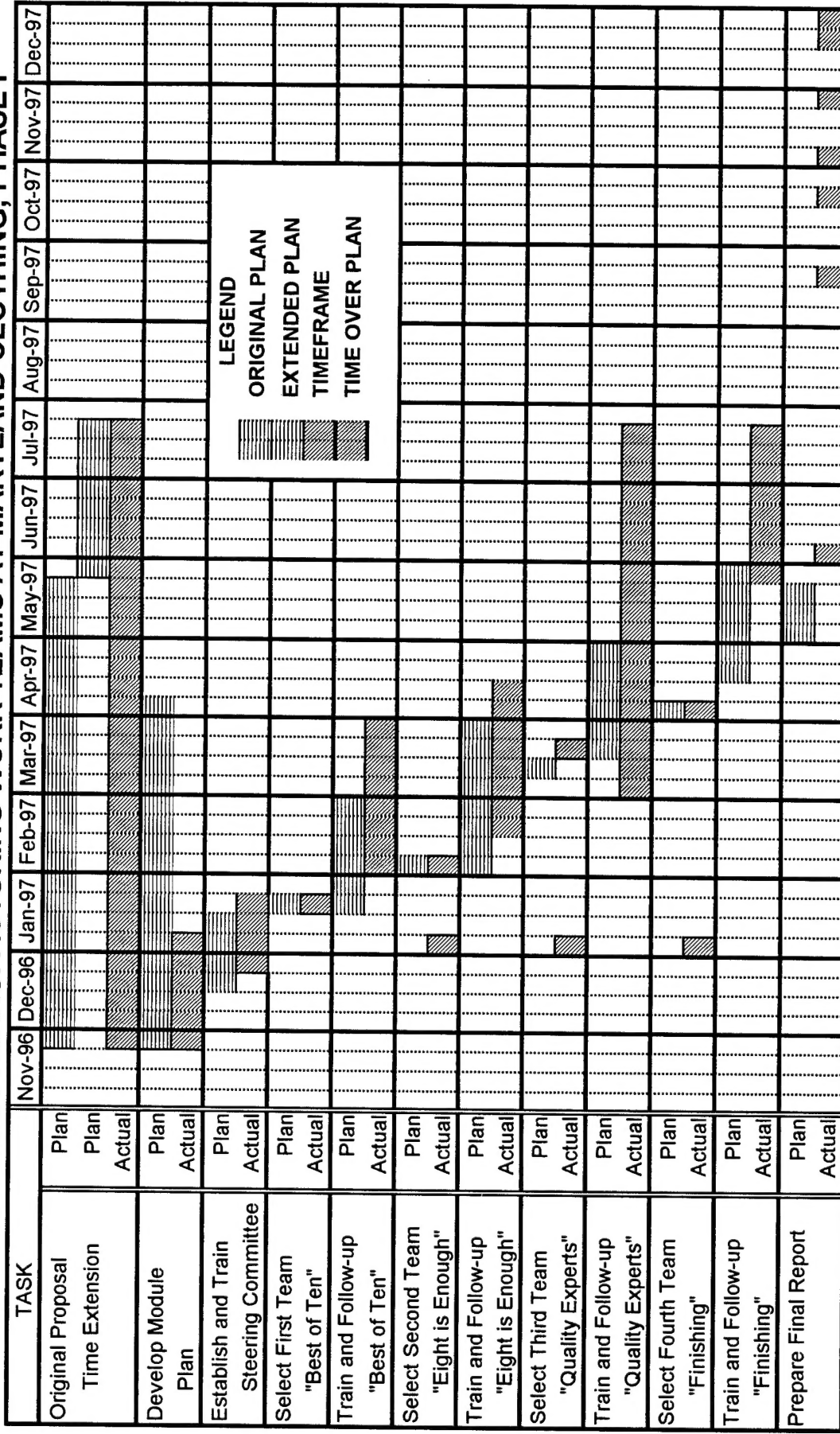


MdPerformance.ppt

CGA PPFG T1-P1, Final Report

# TIMELINE ANALYSIS, PLANNED VS. ACTUAL

## INSTALL MODULAR MANUFACTURING WORK TEAMS AT MARYLAND CLOTHING, PHASE I



## MARYLAND CLOTHING MODULES, PHASE I MONTHLY MANPOWER LOADING DOCUMENT

TASK	PROJECT PERSONNEL	Nov-Jan 97		Feb-97		Mar-97		Apr-97		May-97		Jun-97		Jul-97		Aug-97		COMBINED		PROJECT TOTALS		
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Variance
Develop Module Plan	C. Gilbert	8	0															8	0	Module Plan		Variance
	R. Lowder	96	94			8		8										112	94	Plan	Actual	
	A. Rodriguez	108	228.5															108	228.5	228	322.5	-94.5
Establish Steering Committee	C. Gilbert	4	0															4	0	Steering Comm.		Variance
	R. Lowder	4	6															4	6	Plan	Actual	
	A. Rodriguez	8	8															8	8	16	14	2
Train Steering Committee	C. Gilbert	0	0															0	0	Train Steer.		Variance
	R. Lowder	20	20															20	20	Plan	Actual	
	A. Rodriguez	24	24															24	24	44	44	0
Select First Team	C. Gilbert	0	0															0	0	Select 1st		Variance
	R. Lowder	0	0															0	0	Plan	Actual	
	P. Stewart	8	8															8	8	8	8	0
Train First Team	C. Gilbert	4	0															4	0	Class 1st		Variance
	R. Lowder	84	0		40		24											64	64	Plan	Actual	
	P. Stewart	60	0	32		32		40										92	72	160	136	24
Follow-up, First Team	C. Gilbert	0	0	4														4	0	Follow 1st		Variance
	R. Lowder	0	0	8														8	0	Plan	Actual	
	P. Stewart	0	0	20	24													20	24	32	24	8
Select Second Team	C. Gilbert	0	0	4														4	0	Select 2nd		Variance
	R. Lowder	0	8	4														4	8	Plan	Actual	
	P. Stewart	0	0	0	4													0	4	8	12	-4
Train Second Team	C. Gilbert	0	0	4														4	0	Class 2nd		Variance
	R. Lowder	0	0	40	16		16											40	32	Plan	Actual	
	P. Stewart	0	0	84	12	32	48		40									116	100	160	132	28
Follow-up, Second Team	C. Gilbert	0	0															0	0	Follow 2nd		Variance
	R. Lowder	0	0															0	0	Plan	Actual	
	P. Stewart	0	0			32				32								32	32	32	32	0
Select Third Team	C. Gilbert	0	0															0	0	Select 3rd		Variance
	R. Lowder	0	8															0	8	Plan	Actual	
	P. Stewart	0	0			8	8											8	8	8	16	-8
Train Third Team	C. Gilbert	0	0		4			0										4	0	Class 3rd		Variance
	R. Lowder	0	0		40		16											40	16	Plan	Actual	
	P. Stewart	0	0		72	72	44	40	0			32						116	144	160	160	0
Follow-up, Third Team	C. Gilbert	0	0					4										4	0	Follow 3rd		Variance
	R. Lowder	0	0					16										16	40	Plan	Actual	
	P. Stewart	0	0					20		40		16		64		40		20	120	40	160	-120
Select Fourth Team	C. Gilbert	0	0															0	0	Select 4th		Variance
	R. Lowder	0	12					4										4	12	Plan	Actual	
	P. Stewart	0	0					8										8	0	12	12	0
Train Fourth Team	C. Gilbert	0	0						4									4	0	Class 4th		Variance
	R. Lowder	0	0					40	24	8	8							48	32	Plan	Actual	
	P. Stewart	0	0					40	32	68	24		44		32			108	132	160	164	-4
Follow-up, Fourth Team	C. Gilbert	0	0															0	0	Follow 4th		Variance
	R. Lowder	0	0						16	16								16	56	Plan	Actual	
	P. Stewart	0	0						40		20		40		40			40	60	56	116	-60
Prepare Final Report	C. Gilbert	0	0						16			16						16	16	Final Report		Variance
	R. Lowder	0	0						24									24	0	Plan	Actual	
	P. Stewart	0	0						8									8	0	48	16	32
TOTALS	C. Gilbert	16	0	12	0	4	0	4	0	20	0	0	16	0	0	0	0	56	16	PROJECT		Variance
	R. Lowder	184	148	52	56	48	40	68	40	48	24	0	0	0	0	0	80	400	388	Plan	Actual	
	P. Stewart	208	268.5	136	40	144	160	112	152	116	96	0	112	0	136	0	0	716	965	1172	1368.5	-196.5
		Nov-Jan 97		Feb-97		Mar-97		Apr-97		May-97		Jun-97		Jul-97		Aug-97		PROJECT				
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	
MONTHLY TOTALS		408	418.5	200	96	196	200	184	192	184	120	0	128	0	136	0	80	1172	1368.5			
MONTHLY VARIANCE			-8.5		104		-4		-8		64		-128		-136		-80		-188.5			
PROJECT VARIANCE			-8.5		104		100		92		156		28		-108		-188		-196.5			



## MARYLAND CLOTHING, BILLING BUDGET VS. ACTUAL

## PHASE I

Month	Consultant	Hours Worked		Budgeted Amounts			Actual Amounts			Account Variances			Expenses Per Hour		Fees Per Hour	
		Actual	Budget	Fees	Expenses	Total	Fees	Expenses	Totals	Fees	Expenses	Total	Actual	Variance	Actual	Variance
Nov-96	Alfonso-Stu	54.0	32.0	\$ 3,119.53	\$ 880.44	\$ 3,999.97	\$ 5,313.60	\$ 1,798.58	\$ 7,112.18	\$ (2,194.07)	\$ (918.14)	\$ (3,112.21)	\$ 33.31	\$ (5.79)	\$ 98.40	\$ (0.91)
	Bob-Charlie	48.5	36.0	\$ 3,509.48	\$ 990.49	\$ 4,499.97	\$ 4,247.98	\$ 2,139.55	\$ 6,386.73	\$ (738.50)	\$ (1,149.06)	\$ (1,885.76)	\$ 44.11	\$ (16.60)	\$ 87.59	\$ 9.90
	Monthly Total	102.5	68.0	\$ 6,629.01	\$ 1,870.93	\$ 8,499.94	\$ 9,561.58	\$ 3,938.13	\$ 13,499.71	\$ (2,932.57)	\$ (2,067.20)	\$ (4,997.97)	\$ 36.42	\$ (10.91)	\$ 93.26	\$ 4.20
Dec-96	Alfonso-Stu	116.0	96.0	\$ 9,358.60	\$ 2,641.32	\$ 11,999.92	\$ 11,217.60	\$ 3,927.07	\$ 15,144.67	\$ (1,859.00)	\$ (1,285.75)	\$ (3,144.75)	\$ 33.85	\$ (6.34)	\$ 96.70	\$ 0.78
	Bob-Charlie	32.0	76.0	\$ 7,408.89	\$ 2,091.04	\$ 9,499.93	\$ 2,922.09	\$ 419.74	\$ 3,341.83	\$ 4,486.80	\$ 1,671.30	\$ 6,158.10	\$ 13.12	\$ 14.40	\$ 91.32	\$ 6.17
	Monthly Total	148.0	172.0	\$ 16,767.50	\$ 4,732.36	\$ 21,499.86	\$ 14,139.69	\$ 4,346.81	\$ 18,486.50	\$ 2,627.81	\$ 385.55	\$ 3,013.35	\$ 25.37	\$ (1.86)	\$ 95.54	\$ 1.95
Jan-97	Alfonso-Stu	108.0	80.0	\$ 7,798.84	\$ 2,201.10	\$ 9,999.93	\$ 10,627.20	\$ 3,022.18	\$ 13,649.38	\$ (2,828.36)	\$ (821.08)	\$ (3,649.45)	\$ 27.98	\$ (0.47)	\$ 98.40	\$ (0.91)
	Bob-Charlie	62.0	88.0	\$ 8,578.72	\$ 2,421.21	\$ 10,999.92	\$ 5,661.55	\$ 2,529.11	\$ 8,190.66	\$ 2,917.17	\$ (107.90)	\$ 2,809.26	\$ 40.79	\$ (13.28)	\$ 91.32	\$ 6.17
	Monthly Total	170.0	168.0	\$ 16,377.55	\$ 4,622.30	\$ 20,999.85	\$ 16,288.75	\$ 5,551.29	\$ 21,840.04	\$ 88.80	\$ (926.99)	\$ (840.18)	\$ 32.65	\$ (5.14)	\$ 95.82	\$ 1.67
Feb-97	Alfonso-Stu	48.0	136.0	\$ 13,258.02	\$ 3,741.86	\$ 16,999.88	\$ 4,723.20	\$ 2,621.25	\$ 7,344.45	\$ 8,534.82	\$ 1,120.61	\$ 9,655.43	\$ 54.61	\$ (27.10)	\$ 98.40	\$ (0.91)
	Bob-Charlie	56.0	64.0	\$ 6,239.07	\$ 1,760.88	\$ 7,999.95	\$ 5,113.65	\$ 1,671.17	\$ 6,784.82	\$ 1,125.42	\$ 89.71	\$ 1,215.13	\$ 29.84	\$ (2.33)	\$ 91.32	\$ 6.17
	Monthly Total	104.0	200.0	\$ 19,497.09	\$ 5,502.74	\$ 24,999.83	\$ 9,836.85	\$ 4,292.42	\$ 14,129.27	\$ 9,650.24	\$ 1,210.32	\$ 10,870.56	\$ 41.27	\$ (13.76)	\$ 94.59	\$ 2.90
Mar-97	Alfonso-Stu	160.0	144.0	\$ 14,037.90	\$ 3,961.97	\$ 17,999.87	\$ 15,744.00	\$ 4,086.26	\$ 19,830.26	\$ (1,706.10)	\$ (124.29)	\$ (1,830.38)	\$ 25.54	\$ 1.97	\$ 98.40	\$ (0.91)
	Bob-Charlie	40.0	52.0	\$ 5,069.24	\$ 1,430.71	\$ 6,499.96	\$ 3,652.61	\$ 1,765.98	\$ 5,418.59	\$ 1,416.63	\$ (335.27)	\$ 1,081.37	\$ 44.15	\$ (16.64)	\$ 91.32	\$ 6.17
	Monthly Total	200.0	196.0	\$ 19,107.15	\$ 5,392.68	\$ 24,499.83	\$ 19,396.61	\$ 5,852.24	\$ 25,248.85	\$ (289.46)	\$ (459.56)	\$ (749.02)	\$ 29.26	\$ (1.75)	\$ 96.95	\$ 0.50
Apr-97	Alfonso-Stu	152.0	112.0	\$ 10,918.37	\$ 3,081.53	\$ 13,999.90	\$ 14,169.60	\$ 3,730.09	\$ 17,899.69	\$ (3,251.23)	\$ (648.56)	\$ (3,899.79)	\$ 24.54	\$ 2.97	\$ 93.22	\$ 4.26
	Bob-Charlie	40.0	72.0	\$ 7,018.95	\$ 1,980.99	\$ 8,999.94	\$ 3,652.61	\$ 1,247.86	\$ 4,900.47	\$ 3,366.34	\$ 733.13	\$ 4,099.47	\$ 31.20	\$ (3.68)	\$ 91.32	\$ 6.17
	Monthly Total	192.0	184.0	\$ 17,937.32	\$ 5,062.52	\$ 22,999.84	\$ 17,822.21	\$ 4,977.95	\$ 22,800.16	\$ 115.11	\$ 84.57	\$ 199.68	\$ 26.93	\$ 1.59	\$ 92.82	\$ 4.66
May-97	Alfonso-Stu	96.0	116.0	\$ 11,308.31	\$ 3,191.59	\$ 14,499.90	\$ 9,446.40	\$ 2,946.97	\$ 12,393.37	\$ 1,861.91	\$ 244.62	\$ 2,106.53	\$ 30.70	\$ (3.18)	\$ 98.40	\$ (0.91)
	Bob-Charlie	24.0	68.0	\$ 6,629.01	\$ 1,870.93	\$ 8,499.94	\$ 2,191.56	\$ 388.81	\$ 2,580.37	\$ 4,437.45	\$ 1,482.12	\$ 5,919.57	\$ 16.20	\$ 11.31	\$ 91.32	\$ 6.17
	Monthly Total	120.0	184.0	\$ 17,937.32	\$ 5,062.52	\$ 22,999.84	\$ 11,637.96	\$ 3,335.78	\$ 14,973.74	\$ 6,299.36	\$ 1,726.74	\$ 8,026.10	\$ 27.80	\$ (0.28)	\$ 96.95	\$ 0.50
Jun-97	Alfonso-Stu	128.0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Bob-Charlie	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Monthly Total	128.0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Jul-97	Alfonso-Stu	136.0	-	\$ -	\$ -	\$ -	\$ 13,382.40	\$ 2,848.12	\$ 16,230.52	\$ (13,382.40)	\$ (2,848.12)	\$ (16,230.52)	\$ 20.94	\$ 6.57	\$ 98.40	\$ (0.91)
	Bob-Charlie	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Monthly Total	136.0	-	\$ -	\$ -	\$ -	\$ 13,382.40	\$ 2,848.12	\$ 16,230.52	\$ (13,382.40)	\$ (2,848.12)	\$ (16,230.52)	\$ 20.94	\$ 6.57	\$ 98.40	\$ (0.91)
Project Totals	Alfonso-Stu	998.0	716.0	\$ 99,799.59	\$ 19,699.81	\$ 119,499.40	\$ 84,624.00	\$ 24,980.52	\$ 109,604.52	\$ (14,824.42)	\$ (5,280.71)	\$ (20,105.13)	\$ 25.03	\$ 2.48	\$ 84.79	\$ 12.69
	Bob-Charlie	302.5	456.0	\$ 44,453.36	\$ 12,546.25	\$ 56,999.61	\$ 27,442.05	\$ 10,162.22	\$ 37,602.47	\$ 17,011.31	\$ 2,384.03	\$ 19,397.14	\$ 33.59	\$ (6.08)	\$ 90.72	\$ 6.77
	Monthly Total	1,300.5	1,172.0	\$ 144,252.94	\$ 32,246.05	\$ 176,499.01	\$ 112,066.05	\$ 35,142.74	\$ 147,206.99	\$ 2,989.98	\$ (2,896.68)	\$ (767.98)	\$ 77.92	\$ 0.49	\$ 86.17	\$ 11.31